

MIS780 Advanced AI For Business - Assignment 2 - T2 2024

Task Number: Business Problem Name

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1. Executive Summary

Use this section to introduce the business problem, data set, method, experiments, and obtained results

2. Data Preprocessing

Carry out necessary data preprocessing and exploration.

```
# Import necessary libraries
from __future__ import print_function
import os
import math
import datetime
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

from sklearn.model_selection import cross_val_score
from sklearn.model_selection import KFold
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler, MinMaxScaler
from sklearn.preprocessing import OneHotEncoder
from sklearn.impute import SimpleImputer
```

```

from sklearn.pipeline import Pipeline
from sklearn.metrics import mean_absolute_error

pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)

from google.colab import drive
drive.mount('/content/drive')

Mounted at /content/drive

# Load the dataset
file_path = '/content/Part1_house_price.csv'
house_price = pd.read_csv(file_path)

house_price.set_index('id', inplace=True)
print('Number of records read: ', house_price.size)

```

Number of records read: 400000

```

# Display basic information about the dataset
print(house_price.info())
house_price.head(10)

```

```

<class 'pandas.core.frame.DataFrame'>
Index: 20000 entries, 7129300520 to 3566800485
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
---  -
0   date                   20000 non-null  object
1   price                  20000 non-null  float64
2   bedrooms               20000 non-null  int64
3   bathrooms              20000 non-null  float64
4   sqft_living            20000 non-null  int64
5   sqft_lot               20000 non-null  int64
6   floors                 20000 non-null  float64
7   waterfront             20000 non-null  int64
8   view                  20000 non-null  int64
9   condition              20000 non-null  int64
10  grade                  20000 non-null  int64
11  sqft_above             20000 non-null  int64
12  sqft_basement          20000 non-null  int64
13  yr_built               20000 non-null  int64
14  yr_renovated           20000 non-null  int64
15  zipcode                20000 non-null  int64
16  lat                    20000 non-null  float64
17  long                   20000 non-null  float64
18  sqft_living15          20000 non-null  int64
19  sqft_lot15             20000 non-null  int64
dtypes: float64(5), int64(14), object(1)

```

memory usage: 3.2+ MB
None

```
{"summary":{"\n  \"name\": \"house_price\",\n  \"rows\": 20000,\n  \"fields\": [\n    {\n      \"column\": \"id\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 2866264106,\n        \"min\": 1000102,\n        \"max\": 9900000190,\n        \"num_unique_values\": 19829,\n        \"samples\": [\n          7841300285,\n          3541700170,\n          2525000760\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"date\",\n      \"properties\": {\n        \"dtype\": \"object\",\n        \"num_unique_values\": 371,\n        \"samples\": [\n          \"20140809T000000\",\n          \"20140620T000000\",\n          \"20140529T000000\"\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"price\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 366184.5162328271,\n        \"min\": 75000.0,\n        \"max\": 7700000.0,\n        \"num_unique_values\": 3348,\n        \"samples\": [\n          998160.0,\n          433200.0,\n          1850000.0\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"bedrooms\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 0,\n        \"min\": 0,\n        \"max\": 33,\n        \"num_unique_values\": 13,\n        \"samples\": [\n          10,\n          9,\n          3\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"bathrooms\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 0.7624115610437519,\n        \"min\": 0.0,\n        \"max\": 8.0,\n        \"num_unique_values\": 29,\n        \"samples\": [\n          7.75,\n          3.75,\n          0.75\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"sqft_living\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 905,\n        \"min\": 290,\n        \"max\": 13540,\n        \"num_unique_values\": 879,\n        \"samples\": [\n          3570,\n          3180,\n          1048\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"sqft_lot\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 41770,\n        \"min\": 520,\n        \"max\": 1651359,\n        \"num_unique_values\": 9173,\n        \"samples\": [\n          17424,\n          10128,\n          94525\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"floors\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 0.5167764027048058,\n        \"min\": 1.0,\n        \"max\": 3.5,\n        \"num_unique_values\": 6,\n        \"samples\": [\n          1.0,\n          2.0,\n          3.5\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      }\n    },\n    {\n      \"column\": \"waterfront\",\n      \"properties\": {\n        \"dtype\": \"number\",
```

```

\ "number\ ",\n          \ "std\ ": 0,\n          \ "min\ ": 0,\n
\ "max\ ": 1,\n          \ "num_unique_values\ ": 2,\n          \ "samples\ ":
[\n          1,\n          0\n          ],\n          \ "semantic_type\ ":
\ "\",\n          \ "description\ ": \ "\",\n          }\n          },\n          {\n
\ "column\ ": \ "view\ ",\n          \ "properties\ ": {\n          \ "dtype\ ":
\ "number\ ",\n          \ "std\ ": 0,\n          \ "min\ ": 0,\n
\ "max\ ": 4,\n          \ "num_unique_values\ ": 5,\n          \ "samples\ ":
[\n          3,\n          1\n          ],\n          \ "semantic_type\ ":
\ "\",\n          \ "description\ ": \ "\",\n          }\n          },\n          {\n
\ "column\ ": \ "condition\ ",\n          \ "properties\ ": {\n
\ "dtype\ ": \ "number\ ",\n          \ "std\ ": 0,\n          \ "min\ ": 1,\n
\ "max\ ": 5,\n          \ "num_unique_values\ ": 5,\n          \ "samples\ ":
[\n          5,\n          2\n          ],\n          \ "semantic_type\ ":
\ "\",\n          \ "description\ ": \ "\",\n          }\n          },\n          {\n
\ "column\ ": \ "grade\ ",\n          \ "properties\ ": {\n          \ "dtype\ ":
\ "number\ ",\n          \ "std\ ": 1,\n          \ "min\ ": 1,\n
\ "max\ ": 13,\n          \ "num_unique_values\ ": 12,\n          \ "samples\ ":
[\n          13,\n          3\n          ],\n          \ "semantic_type\ ":
\ "\",\n          \ "description\ ": \ "\",\n          }\n          },\n          {\n
\ "column\ ": \ "sqft_above\ ",\n          \ "properties\ ": {\n
\ "dtype\ ": \ "number\ ",\n          \ "std\ ": 811,\n          \ "min\ ": 290,\n
\ "max\ ": 9410,\n          \ "num_unique_values\ ": 792,\n
\ "samples\ ": [\n          2678,\n          998\n          ],\n
\ "semantic_type\ ": \ "\",\n          \ "description\ ": \ "\",\n          }\n
n          },\n          {\n          \ "column\ ": \ "sqft_basement\ ",\n
\ "properties\ ": {\n          \ "dtype\ ": \ "number\ ",\n          \ "std\ ":
447,\n          \ "min\ ": 0,\n          \ "max\ ": 4820,\n
\ "num_unique_values\ ": 280,\n          \ "samples\ ": [\n          800,\n
1780\n          ],\n          \ "semantic_type\ ": \ "\",\n
\ "description\ ": \ "\",\n          }\n          },\n          {\n          \ "column\ ":
\ "yr_built\ ",\n          \ "properties\ ": {\n          \ "dtype\ ":
\ "number\ ",\n          \ "std\ ": 28,\n          \ "min\ ": 1900,\n
\ "max\ ": 2015,\n          \ "num_unique_values\ ": 116,\n
\ "samples\ ": [\n          1943,\n          1987\n          ],\n
\ "semantic_type\ ": \ "\",\n          \ "description\ ": \ "\",\n          }\n
n          },\n          {\n          \ "column\ ": \ "yr_renovated\ ",\n
\ "properties\ ": {\n          \ "dtype\ ": \ "number\ ",\n          \ "std\ ":
415,\n          \ "min\ ": 0,\n          \ "max\ ": 2015,\n
\ "num_unique_values\ ": 70,\n          \ "samples\ ": [\n          1977,\n
0\n          ],\n          \ "semantic_type\ ": \ "\",\n
\ "description\ ": \ "\",\n          }\n          },\n          {\n          \ "column\ ":
\ "zipcode\ ",\n          \ "properties\ ": {\n          \ "dtype\ ": \ "number\ ",\n
\ "std\ ": 54,\n          \ "min\ ": 98001,\n          \ "max\ ":
98199,\n          \ "num_unique_values\ ": 70,\n          \ "samples\ ": [\n
98112,\n          98178\n          ],\n          \ "semantic_type\ ": \ "\",\n
n          \ "description\ ": \ "\",\n          }\n          },\n          {\n
\ "column\ ": \ "lat\ ",\n          \ "properties\ ": {\n          \ "dtype\ ":
\ "number\ ",\n          \ "std\ ": 0.1393198804744827,\n          \ "min\ ":
47.1559,\n          \ "max\ ": 47.7776,\n          \ "num_unique_values\ ":

```

```

4989,\n          \"samples\": [\n          47.6869,\n          47.6288\n],\n          \"semantic_type\": \"\", \n          \"description\": \"\"\n}\n    },\n    {\n        \"column\": \"long\", \n        \"properties\": {\n            \"dtype\": \"number\", \n            \"std\": 0.13957766917471645,\n            \"min\": -122.519,\n            \"max\": -121.315,\n            \"num_unique_values\": 748,\n            \"samples\": [\n                -121.894,\n                -122.313\n            ],\n            \"semantic_type\": \"\", \n            \"description\": \"\" \n        },\n        {\n            \"column\": \"sqft_living15\", \n            \"properties\": {\n                \"dtype\": \"number\", \n                \"std\": 675,\n                \"min\": 399,\n                \"max\": 6210,\n                \"num_unique_values\": 681,\n                \"samples\": [\n                    1639,\n                    1509\n                ],\n                \"semantic_type\": \"\", \n                \"description\": \"\" \n            },\n            {\n                \"column\": \"sqft_lot15\", \n                \"properties\": {\n                    \"dtype\": \"number\", \n                    \"std\": 26942,\n                    \"min\": 651,\n                    \"max\": 871200,\n                    \"num_unique_values\": 8214,\n                    \"samples\": [\n                        4554,\n                        19950\n                    ],\n                    \"semantic_type\": \"\", \n                    \"description\": \"\" \n                }\n            }\n        ]\n    },\n    \"type\": \"dataframe\", \"variable_name\": \"house_price\"}

```

```

# Finding column types
house_price.dtypes

```

```

date          object
price         float64
bedrooms      int64
bathrooms     float64
sqft_living   int64
sqft_lot      int64
floors        float64
waterfront    int64
view          int64
condition     int64
grade         int64
sqft_above    int64
sqft_basement int64
yr_built      int64
yr_renovated  int64
zipcode       int64
lat           float64
long          float64
sqft_living15 int64
sqft_lot15    int64
dtype: object

```

```

# Identification of missing values
missing = house_price.isnull().sum()
missing = missing[missing > 0]
missing.sort_values(ascending=False)

```

```
Series([], dtype: int64)
```

```
# Convert 'date' to datetime and extract year, month
house_price['date'] = pd.to_datetime(house_price['date'])
house_price['year'] = house_price['date'].dt.year
house_price['month'] = house_price['date'].dt.month
house_price['day'] = house_price['date'].dt.day
house_price = house_price.drop(['date'], axis=1)

# Split the data into features (X) and target variable (y)
predictors = house_price.drop(['price'], axis=1)
# Dropping columns that are not predictors
target = 'price'

# Normalization (particularly for MLP)
scaler = StandardScaler()
X_scaled = scaler.fit_transform(predictors)

train_size, valid_size, test_size = (0.7, 0.3, 0.0)
task1_train, task1_valid = train_test_split(house_price,
                                             test_size=valid_size,
                                             random_state=2024)

task1_y_train = task1_train[[target]]
task1_x_train = task1_train.drop(target, axis=1)
task1_y_valid = task1_valid[[target]]
task1_x_valid = task1_valid.drop(target, axis=1)

print('Size of training set: ', len(task1_x_train))
print('Size of validation set: ', len(task1_x_valid))

Size of training set: 14000
Size of validation set: 6000

print('Missing training values before imputation = ',
task1_x_train.isnull().sum().sum())
print('Missing validation values before imputation = ',
task1_x_valid.isnull().sum().sum())

Missing training values before imputation = 0
Missing validation values before imputation = 0

scaler = MinMaxScaler(feature_range=(0, 1),
copy=True).fit(task1_x_train)
task1_x_train = pd.DataFrame(scaler.transform(task1_x_train),
                             columns = task1_x_train.columns, index =
task1_x_train.index)
task1_x_valid = pd.DataFrame(scaler.transform(task1_x_valid),
                             columns = task1_x_valid.columns, index =
task1_x_valid.index)
```

```
print('X train min =', round(task1_x_train.min().min(),4), '; max =',
      round(task1_x_train.max().max(), 4))
print('X valid min =', round(task1_x_valid.min().min(),4), '; max =',
      round(task1_x_valid.max().max(), 4))
```

```
X train min = 0.0 ; max = 1.0
X valid min = -0.0033 ; max = 1.1671
```

3. Predictive Modeling

Create and explain your models (e.g., model architecture, model parameters). Evaluate the models on the experimental data sets.

```
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, mean_absolute_error

lr_model = LinearRegression()
lr_model.fit(task1_x_train, task1_y_train)

LinearRegression()

y_train_pred = lr_model.predict(task1_x_train)
y_valid_pred = lr_model.predict(task1_x_valid)

train_mse = mean_squared_error(task1_y_train, y_train_pred)
train_mae = mean_absolute_error(task1_y_train, y_train_pred)
valid_mse = mean_squared_error(task1_y_valid, y_valid_pred)
valid_mae = mean_absolute_error(task1_y_valid, y_valid_pred)

print('Linear Regression:')
print('Train MSE: ', round(train_mse, 2), ', Train MAE: ',
      round(train_mae, 2))
print('Validation MSE: ', round(valid_mse, 2), ', Validation MAE: ',
      round(valid_mae, 2))

Linear Regression:
Train MSE: 39369572376.89 , Train MAE: 124935.1
Validation MSE: 41515624097.5 , Validation MAE: 125767.85
```

MLP

```
import tensorflow as tf
from tensorflow.keras import metrics
from tensorflow.keras import regularizers
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, Dropout
from tensorflow.keras.optimizers import Nadam, RMSprop, Adam
```

```

# Convert Pandas DataFrames to NumPy arrays (if not already done)
arr_x_train = np.array(task1_x_train)
arr_y_train = np.array(task1_y_train)
arr_x_valid = np.array(task1_x_valid)
arr_y_valid = np.array(task1_y_valid)

print('Training shape:', arr_x_train.shape)
print('Training samples: ', arr_x_train.shape[0])
print('Validation samples: ', arr_x_valid.shape[0])

Training shape: (14000, 21)
Training samples: 14000
Validation samples: 6000

def basic_mlp_model(x_size, y_size):
    model = Sequential()
    model.add(Dense(64, activation='relu', input_shape=(x_size,)))
    model.add(Dense(y_size)) # Output layer
    model.compile(optimizer=Adam(learning_rate=0.001),
loss='mean_squared_error', metrics=[metrics.mae])
    return model

def advanced_mlp_model(x_size, y_size):
    model = Sequential()
    model.add(Dense(128, activation='relu', input_shape=(x_size,)))
    model.add(Dropout(0.2))
    model.add(Dense(64, activation='relu'))
    model.add(Dropout(0.2))
    model.add(Dense(32, activation='relu'))
    model.add(Dense(y_size)) # Output layer
    model.compile(optimizer=Adam(learning_rate=0.001),
loss='mean_squared_error', metrics=[metrics.mae])
    return model

# Choose the model to train
model_1 = basic_mlp_model(arr_x_train.shape[1], arr_y_train.shape[1])
model_1.summary()

print("\nTraining Basic MLP Model:")
# Early Stopping Callback
early_stopping = tf.keras.callbacks.EarlyStopping(monitor='val_loss',
patience=20, restore_best_weights=True)

# Training the model
history_1 = model_1.fit(
    arr_x_train, arr_y_train,
    batch_size=64,
    epochs=500,
    validation_data=(arr_x_valid, arr_y_valid),
    verbose=2,

```



```

callbacks=[early_stopping]
)
/usr/local/lib/python3.10/dist-packages/keras/src/layers/core/
dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim`
argument to a layer. When using Sequential models, prefer using an
`Input(shape)` object as the first layer in the model instead.
super().__init__(activity_regularizer=activity_regularizer,
**kwargs)

```

Model: "sequential"

Layer (type) Param #	Output Shape
dense (Dense) 1,408	(None, 64)
dense_1 (Dense) 65	(None, 1)

Total params: 1,473 (5.75 KB)

Trainable params: 1,473 (5.75 KB)

Non-trainable params: 0 (0.00 B)

Training Basic MLP Model:

Epoch 1/500

219/219 - 2s - 8ms/step - loss: 421870698496.0000 -
mean_absolute_error: 536743.4375 - val_loss: 418626535424.0000 -
val_mean_absolute_error: 532765.9375

Epoch 2/500

219/219 - 1s - 6ms/step - loss: 421800181760.0000 -
mean_absolute_error: 536681.3125 - val_loss: 418519875584.0000 -
val_mean_absolute_error: 532671.1250

Epoch 3/500

219/219 - 1s - 4ms/step - loss: 421658296320.0000 -
mean_absolute_error: 536556.6250 - val_loss: 418345025536.0000 -
val_mean_absolute_error: 532516.1250

Epoch 4/500

219/219 - 1s - 6ms/step - loss: 421451169792.0000 -
mean_absolute_error: 536374.2500 - val_loss: 418108145664.0000 -
val_mean_absolute_error: 532305.9375

Epoch 5/500
219/219 - 1s - 4ms/step - loss: 421183815680.0000 -
mean_absolute_error: 536138.6875 - val_loss: 417813790720.0000 -
val_mean_absolute_error: 532044.3125
Epoch 6/500
219/219 - 1s - 2ms/step - loss: 420860723200.0000 -
mean_absolute_error: 535853.3750 - val_loss: 417465106432.0000 -
val_mean_absolute_error: 531734.4375
Epoch 7/500
219/219 - 1s - 3ms/step - loss: 420485234688.0000 -
mean_absolute_error: 535521.7500 - val_loss: 417065631744.0000 -
val_mean_absolute_error: 531379.1875
Epoch 8/500
219/219 - 0s - 2ms/step - loss: 420054695936.0000 -
mean_absolute_error: 535144.2500 - val_loss: 416611303424.0000 -
val_mean_absolute_error: 530974.9375
Epoch 9/500
219/219 - 1s - 3ms/step - loss: 419573989376.0000 -
mean_absolute_error: 534717.9375 - val_loss: 416109527040.0000 -
val_mean_absolute_error: 530528.4375
Epoch 10/500
219/219 - 0s - 2ms/step - loss: 419048849408.0000 -
mean_absolute_error: 534253.5625 - val_loss: 415566266368.0000 -
val_mean_absolute_error: 530044.3125
Epoch 11/500
219/219 - 1s - 3ms/step - loss: 418481700864.0000 -
mean_absolute_error: 533751.1250 - val_loss: 414982144000.0000 -
val_mean_absolute_error: 529523.2500
Epoch 12/500
219/219 - 1s - 3ms/step - loss: 417874280448.0000 -
mean_absolute_error: 533214.3750 - val_loss: 414358208512.0000 -
val_mean_absolute_error: 528965.9375
Epoch 13/500
219/219 - 0s - 2ms/step - loss: 417229012992.0000 -
mean_absolute_error: 532642.0000 - val_loss: 413697146880.0000 -
val_mean_absolute_error: 528375.1875
Epoch 14/500
219/219 - 1s - 3ms/step - loss: 416546095104.0000 -
mean_absolute_error: 532035.4375 - val_loss: 413000728576.0000 -
val_mean_absolute_error: 527751.8750
Epoch 15/500
219/219 - 1s - 3ms/step - loss: 415827755008.0000 -
mean_absolute_error: 531397.8125 - val_loss: 412268986368.0000 -
val_mean_absolute_error: 527096.3125
Epoch 16/500
219/219 - 0s - 2ms/step - loss: 415074123776.0000 -
mean_absolute_error: 530728.6875 - val_loss: 411502379008.0000 -
val_mean_absolute_error: 526408.6875
Epoch 17/500

219/219 - 1s - 3ms/step - loss: 414286970880.0000 -
mean_absolute_error: 530026.3125 - val_loss: 410703757312.0000 -
val_mean_absolute_error: 525691.5625
Epoch 18/500
219/219 - 1s - 3ms/step - loss: 413467181056.0000 -
mean_absolute_error: 529294.1250 - val_loss: 409869549568.0000 -
val_mean_absolute_error: 524941.1250
Epoch 19/500
219/219 - 0s - 2ms/step - loss: 412608135168.0000 -
mean_absolute_error: 528527.0625 - val_loss: 408993660928.0000 -
val_mean_absolute_error: 524152.5625
Epoch 20/500
219/219 - 1s - 3ms/step - loss: 411713306624.0000 -
mean_absolute_error: 527726.1250 - val_loss: 408089985024.0000 -
val_mean_absolute_error: 523337.3750
Epoch 21/500
219/219 - 1s - 3ms/step - loss: 410786627584.0000 -
mean_absolute_error: 526893.8750 - val_loss: 407152623616.0000 -
val_mean_absolute_error: 522490.7812
Epoch 22/500
219/219 - 0s - 2ms/step - loss: 409828163584.0000 -
mean_absolute_error: 526038.6250 - val_loss: 406182166528.0000 -
val_mean_absolute_error: 521612.6250
Epoch 23/500
219/219 - 1s - 4ms/step - loss: 408839061504.0000 -
mean_absolute_error: 525148.7500 - val_loss: 405185036288.0000 -
val_mean_absolute_error: 520709.0312
Epoch 24/500
219/219 - 1s - 6ms/step - loss: 407820763136.0000 -
mean_absolute_error: 524230.6562 - val_loss: 404156252160.0000 -
val_mean_absolute_error: 519775.1875
Epoch 25/500
219/219 - 1s - 6ms/step - loss: 406772285440.0000 -
mean_absolute_error: 523288.2188 - val_loss: 403100041216.0000 -
val_mean_absolute_error: 518814.6875
Epoch 26/500
219/219 - 1s - 3ms/step - loss: 405694709760.0000 -
mean_absolute_error: 522312.0312 - val_loss: 402015158272.0000 -
val_mean_absolute_error: 517826.3125
Epoch 27/500
219/219 - 1s - 5ms/step - loss: 404588363776.0000 -
mean_absolute_error: 521313.2500 - val_loss: 400900358144.0000 -
val_mean_absolute_error: 516809.0938
Epoch 28/500
219/219 - 1s - 3ms/step - loss: 403453935616.0000 -
mean_absolute_error: 520282.8438 - val_loss: 399756689408.0000 -
val_mean_absolute_error: 515763.0625
Epoch 29/500
219/219 - 1s - 3ms/step - loss: 402291720192.0000 -

```
mean_absolute_error: 519227.0625 - val_loss: 398586150912.0000 -  
val_mean_absolute_error: 514690.5312  
Epoch 30/500  
219/219 - 0s - 2ms/step - loss: 401101520896.0000 -  
mean_absolute_error: 518143.4062 - val_loss: 397388840960.0000 -  
val_mean_absolute_error: 513591.3438  
Epoch 31/500  
219/219 - 1s - 3ms/step - loss: 399883632640.0000 -  
mean_absolute_error: 517033.2500 - val_loss: 396165185536.0000 -  
val_mean_absolute_error: 512465.3750  
Epoch 32/500  
219/219 - 1s - 3ms/step - loss: 398638350336.0000 -  
mean_absolute_error: 515894.5000 - val_loss: 394912169984.0000 -  
val_mean_absolute_error: 511310.2188  
Epoch 33/500  
219/219 - 1s - 3ms/step - loss: 397366132736.0000 -  
mean_absolute_error: 514728.6562 - val_loss: 393634349056.0000 -  
val_mean_absolute_error: 510129.3125  
Epoch 34/500  
219/219 - 0s - 2ms/step - loss: 396067110912.0000 -  
mean_absolute_error: 513537.0938 - val_loss: 392330706944.0000 -  
val_mean_absolute_error: 508922.1562  
Epoch 35/500  
219/219 - 0s - 2ms/step - loss: 394742595584.0000 -  
mean_absolute_error: 512315.9062 - val_loss: 391000129536.0000 -  
val_mean_absolute_error: 507686.9062  
Epoch 36/500  
219/219 - 1s - 3ms/step - loss: 393391734784.0000 -  
mean_absolute_error: 511072.8750 - val_loss: 389643108352.0000 -  
val_mean_absolute_error: 506424.1562  
Epoch 37/500  
219/219 - 0s - 2ms/step - loss: 392014561280.0000 -  
mean_absolute_error: 509803.1875 - val_loss: 388260167680.0000 -  
val_mean_absolute_error: 505134.2812  
Epoch 38/500  
219/219 - 1s - 3ms/step - loss: 390611632128.0000 -  
mean_absolute_error: 508501.9688 - val_loss: 386856386560.0000 -  
val_mean_absolute_error: 503821.6250  
Epoch 39/500  
219/219 - 0s - 2ms/step - loss: 389184290816.0000 -  
mean_absolute_error: 507175.1562 - val_loss: 385422819328.0000 -  
val_mean_absolute_error: 502478.0000  
Epoch 40/500  
219/219 - 1s - 3ms/step - loss: 387731587072.0000 -  
mean_absolute_error: 505826.5000 - val_loss: 383966314496.0000 -  
val_mean_absolute_error: 501109.0000  
Epoch 41/500  
219/219 - 1s - 3ms/step - loss: 386254798848.0000 -  
mean_absolute_error: 504442.5000 - val_loss: 382484676608.0000 -
```

```
val_mean_absolute_error: 499712.7812
Epoch 42/500
219/219 - 1s - 3ms/step - loss: 384754941952.0000 -
mean_absolute_error: 503034.8750 - val_loss: 380983541760.0000 -
val_mean_absolute_error: 498294.4062
Epoch 43/500
219/219 - 1s - 4ms/step - loss: 383229394944.0000 -
mean_absolute_error: 501613.7500 - val_loss: 379455668224.0000 -
val_mean_absolute_error: 496846.7500
Epoch 44/500
219/219 - 1s - 5ms/step - loss: 381679992832.0000 -
mean_absolute_error: 500153.2812 - val_loss: 377902661632.0000 -
val_mean_absolute_error: 495371.0000
Epoch 45/500
219/219 - 1s - 3ms/step - loss: 380107587584.0000 -
mean_absolute_error: 498672.7812 - val_loss: 376328781824.0000 -
val_mean_absolute_error: 493871.3125
Epoch 46/500
219/219 - 1s - 6ms/step - loss: 378513162240.0000 -
mean_absolute_error: 497157.6562 - val_loss: 374733963264.0000 -
val_mean_absolute_error: 492347.0625
Epoch 47/500
219/219 - 1s - 4ms/step - loss: 376897208320.0000 -
mean_absolute_error: 495617.9688 - val_loss: 373116076032.0000 -
val_mean_absolute_error: 490796.0312
Epoch 48/500
219/219 - 1s - 3ms/step - loss: 375257825280.0000 -
mean_absolute_error: 494066.2188 - val_loss: 371474432000.0000 -
val_mean_absolute_error: 489217.5312
Epoch 49/500
219/219 - 0s - 2ms/step - loss: 373596225536.0000 -
mean_absolute_error: 492475.2500 - val_loss: 369815683072.0000 -
val_mean_absolute_error: 487617.4375
Epoch 50/500
219/219 - 1s - 3ms/step - loss: 371913949184.0000 -
mean_absolute_error: 490860.9375 - val_loss: 368129376256.0000 -
val_mean_absolute_error: 485986.0000
Epoch 51/500
219/219 - 1s - 3ms/step - loss: 370210013184.0000 -
mean_absolute_error: 489222.7188 - val_loss: 366424981504.0000 -
val_mean_absolute_error: 484331.3125
Epoch 52/500
219/219 - 1s - 3ms/step - loss: 368484417536.0000 -
mean_absolute_error: 487558.9375 - val_loss: 364703088640.0000 -
val_mean_absolute_error: 482654.2812
Epoch 53/500
219/219 - 1s - 3ms/step - loss: 366737784832.0000 -
mean_absolute_error: 485866.1562 - val_loss: 362953244672.0000 -
val_mean_absolute_error: 480944.2500
```

Epoch 54/500
219/219 - 0s - 2ms/step - loss: 364971524096.0000 -
mean_absolute_error: 484155.9062 - val_loss: 361188327424.0000 -
val_mean_absolute_error: 479213.7812
Epoch 55/500
219/219 - 1s - 3ms/step - loss: 363183996928.0000 -
mean_absolute_error: 482415.5938 - val_loss: 359403388928.0000 -
val_mean_absolute_error: 477457.1562
Epoch 56/500
219/219 - 0s - 2ms/step - loss: 361376776192.0000 -
mean_absolute_error: 480644.2812 - val_loss: 357595709440.0000 -
val_mean_absolute_error: 475672.3125
Epoch 57/500
219/219 - 1s - 3ms/step - loss: 359550124032.0000 -
mean_absolute_error: 478852.5625 - val_loss: 355771842560.0000 -
val_mean_absolute_error: 473864.4375
Epoch 58/500
219/219 - 1s - 3ms/step - loss: 357704073216.0000 -
mean_absolute_error: 477038.9062 - val_loss: 353928675328.0000 -
val_mean_absolute_error: 472030.9062
Epoch 59/500
219/219 - 1s - 3ms/step - loss: 355840032768.0000 -
mean_absolute_error: 475188.2500 - val_loss: 352066207744.0000 -
val_mean_absolute_error: 470171.1875
Epoch 60/500
219/219 - 1s - 3ms/step - loss: 353958297600.0000 -
mean_absolute_error: 473326.4062 - val_loss: 350189256704.0000 -
val_mean_absolute_error: 468289.7500
Epoch 61/500
219/219 - 0s - 2ms/step - loss: 352057229312.0000 -
mean_absolute_error: 471436.3125 - val_loss: 348291006464.0000 -
val_mean_absolute_error: 466379.7188
Epoch 62/500
219/219 - 1s - 3ms/step - loss: 350137024512.0000 -
mean_absolute_error: 469520.9062 - val_loss: 346375389184.0000 -
val_mean_absolute_error: 464444.5312
Epoch 63/500
219/219 - 1s - 3ms/step - loss: 348199157760.0000 -
mean_absolute_error: 467576.2812 - val_loss: 344445222912.0000 -
val_mean_absolute_error: 462486.7812
Epoch 64/500
219/219 - 1s - 4ms/step - loss: 346245431296.0000 -
mean_absolute_error: 465601.5000 - val_loss: 342492479488.0000 -
val_mean_absolute_error: 460498.0938
Epoch 65/500
219/219 - 1s - 6ms/step - loss: 344275320832.0000 -
mean_absolute_error: 463607.1250 - val_loss: 340526596096.0000 -
val_mean_absolute_error: 458487.8125
Epoch 66/500

219/219 - 1s - 5ms/step - loss: 342288105472.0000 -
mean_absolute_error: 461596.7500 - val_loss: 338546982912.0000 -
val_mean_absolute_error: 456454.6875
Epoch 67/500
219/219 - 1s - 5ms/step - loss: 340284440576.0000 -
mean_absolute_error: 459551.1562 - val_loss: 336546824192.0000 -
val_mean_absolute_error: 454391.7188
Epoch 68/500
219/219 - 1s - 3ms/step - loss: 338265407488.0000 -
mean_absolute_error: 457476.3438 - val_loss: 334532771840.0000 -
val_mean_absolute_error: 452305.2812
Epoch 69/500
219/219 - 0s - 2ms/step - loss: 336229826560.0000 -
mean_absolute_error: 455400.5000 - val_loss: 332505907200.0000 -
val_mean_absolute_error: 450196.3438
Epoch 70/500
219/219 - 1s - 3ms/step - loss: 334177959936.0000 -
mean_absolute_error: 453268.8438 - val_loss: 330459873280.0000 -
val_mean_absolute_error: 448057.7188
Epoch 71/500
219/219 - 0s - 2ms/step - loss: 332114264064.0000 -
mean_absolute_error: 451122.9062 - val_loss: 328405090304.0000 -
val_mean_absolute_error: 445900.0625
Epoch 72/500
219/219 - 1s - 3ms/step - loss: 330036609024.0000 -
mean_absolute_error: 448962.3438 - val_loss: 326333366272.0000 -
val_mean_absolute_error: 443714.5938
Epoch 73/500
219/219 - 1s - 3ms/step - loss: 327944994816.0000 -
mean_absolute_error: 446766.9688 - val_loss: 324249550848.0000 -
val_mean_absolute_error: 441505.7188
Epoch 74/500
219/219 - 0s - 2ms/step - loss: 325838700544.0000 -
mean_absolute_error: 444561.5312 - val_loss: 322155675648.0000 -
val_mean_absolute_error: 439275.4688
Epoch 75/500
219/219 - 1s - 3ms/step - loss: 323718217728.0000 -
mean_absolute_error: 442320.3750 - val_loss: 320042139648.0000 -
val_mean_absolute_error: 437013.4688
Epoch 76/500
219/219 - 1s - 3ms/step - loss: 321586429952.0000 -
mean_absolute_error: 440044.0000 - val_loss: 317920313344.0000 -
val_mean_absolute_error: 434731.3125
Epoch 77/500
219/219 - 1s - 3ms/step - loss: 319442223104.0000 -
mean_absolute_error: 437758.4375 - val_loss: 315787476992.0000 -
val_mean_absolute_error: 432425.6875
Epoch 78/500
219/219 - 1s - 3ms/step - loss: 317287137280.0000 -

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mean_absolute_error: 435439.9375 - val_loss: 313640714240.0000 -  
val_mean_absolute_error: 430093.1875  
Epoch 79/500  
219/219 - 0s - 2ms/step - loss: 315120779264.0000 -  
mean_absolute_error: 433103.5000 - val_loss: 311482679296.0000 -  
val_mean_absolute_error: 427736.3125  
Epoch 80/500  
219/219 - 0s - 2ms/step - loss: 312944066560.0000 -  
mean_absolute_error: 430744.6875 - val_loss: 309320548352.0000 -  
val_mean_absolute_error: 425362.0938  
Epoch 81/500  
219/219 - 0s - 2ms/step - loss: 310756868096.0000 -  
mean_absolute_error: 428362.8125 - val_loss: 307148619776.0000 -  
val_mean_absolute_error: 422964.4062  
Epoch 82/500  
219/219 - 1s - 3ms/step - loss: 308558495744.0000 -  
mean_absolute_error: 425961.6562 - val_loss: 304954900480.0000 -  
val_mean_absolute_error: 420529.7188  
Epoch 83/500  
219/219 - 1s - 4ms/step - loss: 306349146112.0000 -  
mean_absolute_error: 423526.3750 - val_loss: 302762557440.0000 -  
val_mean_absolute_error: 418082.9375  
Epoch 84/500  
219/219 - 1s - 3ms/step - loss: 304131342336.0000 -  
mean_absolute_error: 421072.7188 - val_loss: 300552290304.0000 -  
val_mean_absolute_error: 415603.7188  
Epoch 85/500  
219/219 - 1s - 6ms/step - loss: 301903544320.0000 -  
mean_absolute_error: 418597.6562 - val_loss: 298341498880.0000 -  
val_mean_absolute_error: 413109.5938  
Epoch 86/500  
219/219 - 1s - 6ms/step - loss: 299665850368.0000 -  
mean_absolute_error: 416090.8750 - val_loss: 296115077120.0000 -  
val_mean_absolute_error: 410583.6875  
Epoch 87/500  
219/219 - 1s - 4ms/step - loss: 297422389248.0000 -  
mean_absolute_error: 413562.2500 - val_loss: 293884887040.0000 -  
val_mean_absolute_error: 408039.3438  
Epoch 88/500  
219/219 - 1s - 2ms/step - loss: 295170375680.0000 -  
mean_absolute_error: 411024.8125 - val_loss: 291648471040.0000 -  
val_mean_absolute_error: 405473.4375  
Epoch 89/500  
219/219 - 1s - 3ms/step - loss: 292911120384.0000 -  
mean_absolute_error: 408456.4062 - val_loss: 289403109376.0000 -  
val_mean_absolute_error: 402882.5938  
Epoch 90/500  
219/219 - 1s - 2ms/step - loss: 290645180416.0000 -  
mean_absolute_error: 405856.9375 - val_loss: 287152930816.0000 -
```



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val_mean_absolute_error: 400270.3750
Epoch 91/500
219/219 - 1s - 3ms/step - loss: 288373243904.0000 -
mean_absolute_error: 403241.8750 - val_loss: 284898295808.0000 -
val_mean_absolute_error: 397636.7500
Epoch 92/500
219/219 - 1s - 3ms/step - loss: 286095376384.0000 -
mean_absolute_error: 400606.0000 - val_loss: 282636386304.0000 -
val_mean_absolute_error: 394979.0000
Epoch 93/500
219/219 - 1s - 2ms/step - loss: 283811938304.0000 -
mean_absolute_error: 397942.4688 - val_loss: 280371068928.0000 -
val_mean_absolute_error: 392301.4375
Epoch 94/500
219/219 - 1s - 3ms/step - loss: 281523486720.0000 -
mean_absolute_error: 395272.1875 - val_loss: 278093201408.0000 -
val_mean_absolute_error: 389592.2812
Epoch 95/500
219/219 - 1s - 3ms/step - loss: 279229661184.0000 -
mean_absolute_error: 392567.5625 - val_loss: 275815923712.0000 -
val_mean_absolute_error: 386867.0312
Epoch 96/500
219/219 - 1s - 3ms/step - loss: 276930265088.0000 -
mean_absolute_error: 389852.7500 - val_loss: 273540382720.0000 -
val_mean_absolute_error: 384127.6250
Epoch 97/500
219/219 - 1s - 3ms/step - loss: 274626854912.0000 -
mean_absolute_error: 387107.8438 - val_loss: 271253913600.0000 -
val_mean_absolute_error: 381359.6875
Epoch 98/500
219/219 - 1s - 4ms/step - loss: 272319889408.0000 -
mean_absolute_error: 384341.5000 - val_loss: 268969345024.0000 -
val_mean_absolute_error: 378576.5938
Epoch 99/500
219/219 - 1s - 4ms/step - loss: 270008238080.0000 -
mean_absolute_error: 381563.9062 - val_loss: 266685169664.0000 -
val_mean_absolute_error: 375778.4375
Epoch 100/500
219/219 - 1s - 4ms/step - loss: 267698061312.0000 -
mean_absolute_error: 378734.3438 - val_loss: 264381743104.0000 -
val_mean_absolute_error: 372938.0312
Epoch 101/500
219/219 - 1s - 3ms/step - loss: 265386082304.0000 -
mean_absolute_error: 375916.8438 - val_loss: 262090178560.0000 -
val_mean_absolute_error: 370092.5312
Epoch 102/500
219/219 - 1s - 3ms/step - loss: 263071023104.0000 -
mean_absolute_error: 373080.0938 - val_loss: 259802464256.0000 -
val_mean_absolute_error: 367233.2500
```

Epoch 103/500
219/219 - 1s - 6ms/step - loss: 260753227776.0000 -
mean_absolute_error: 370204.3125 - val_loss: 257499971584.0000 -
val_mean_absolute_error: 364338.6562
Epoch 104/500
219/219 - 1s - 3ms/step - loss: 258436382720.0000 -
mean_absolute_error: 367322.6250 - val_loss: 255206670336.0000 -
val_mean_absolute_error: 361436.6875
Epoch 105/500
219/219 - 1s - 5ms/step - loss: 256117063680.0000 -
mean_absolute_error: 364438.1875 - val_loss: 252910977024.0000 -
val_mean_absolute_error: 358511.5625
Epoch 106/500
219/219 - 0s - 2ms/step - loss: 253798694912.0000 -
mean_absolute_error: 361491.5625 - val_loss: 250611695616.0000 -
val_mean_absolute_error: 355565.5938
Epoch 107/500
219/219 - 1s - 3ms/step - loss: 251483308032.0000 -
mean_absolute_error: 358543.9375 - val_loss: 248320327680.0000 -
val_mean_absolute_error: 352613.0625
Epoch 108/500
219/219 - 1s - 3ms/step - loss: 249170788352.0000 -
mean_absolute_error: 355587.6250 - val_loss: 246033055744.0000 -
val_mean_absolute_error: 349652.5625
Epoch 109/500
219/219 - 0s - 2ms/step - loss: 246857924608.0000 -
mean_absolute_error: 352634.9062 - val_loss: 243743080448.0000 -
val_mean_absolute_error: 346671.4688
Epoch 110/500
219/219 - 1s - 2ms/step - loss: 244546420736.0000 -
mean_absolute_error: 349636.9375 - val_loss: 241447288832.0000 -
val_mean_absolute_error: 343664.6875
Epoch 111/500
219/219 - 1s - 3ms/step - loss: 242237964288.0000 -
mean_absolute_error: 346634.9375 - val_loss: 239170011136.0000 -
val_mean_absolute_error: 340662.4688
Epoch 112/500
219/219 - 1s - 3ms/step - loss: 239933816832.0000 -
mean_absolute_error: 343613.3750 - val_loss: 236895436800.0000 -
val_mean_absolute_error: 337646.2188
Epoch 113/500
219/219 - 0s - 2ms/step - loss: 237633650688.0000 -
mean_absolute_error: 340580.2188 - val_loss: 234610933760.0000 -
val_mean_absolute_error: 334597.4062
Epoch 114/500
219/219 - 1s - 3ms/step - loss: 235336286208.0000 -
mean_absolute_error: 337549.7188 - val_loss: 232347222016.0000 -
val_mean_absolute_error: 331560.0938
Epoch 115/500

219/219 - 1s - 3ms/step - loss: 233043722240.0000 -
mean_absolute_error: 334502.6562 - val_loss: 230078627840.0000 -
val_mean_absolute_error: 328494.0938
Epoch 116/500
219/219 - 1s - 3ms/step - loss: 230756859904.0000 -
mean_absolute_error: 331428.4688 - val_loss: 227819913216.0000 -
val_mean_absolute_error: 325416.8438
Epoch 117/500
219/219 - 0s - 2ms/step - loss: 228474847232.0000 -
mean_absolute_error: 328367.0000 - val_loss: 225566556160.0000 -
val_mean_absolute_error: 322325.2500
Epoch 118/500
219/219 - 1s - 3ms/step - loss: 226199846912.0000 -
mean_absolute_error: 325264.6250 - val_loss: 223323717632.0000 -
val_mean_absolute_error: 319229.6562
Epoch 119/500
219/219 - 1s - 3ms/step - loss: 223931334656.0000 -
mean_absolute_error: 322180.2500 - val_loss: 221082238976.0000 -
val_mean_absolute_error: 316121.2500
Epoch 120/500
219/219 - 1s - 5ms/step - loss: 221670490112.0000 -
mean_absolute_error: 319063.7812 - val_loss: 218852950016.0000 -
val_mean_absolute_error: 313018.9375
Epoch 121/500
219/219 - 1s - 4ms/step - loss: 219418705920.0000 -
mean_absolute_error: 315978.2188 - val_loss: 216629936128.0000 -
val_mean_absolute_error: 309913.6875
Epoch 122/500
219/219 - 1s - 6ms/step - loss: 217175654400.0000 -
mean_absolute_error: 312867.8125 - val_loss: 214415589376.0000 -
val_mean_absolute_error: 306809.8125
Epoch 123/500
219/219 - 1s - 4ms/step - loss: 214938697728.0000 -
mean_absolute_error: 309782.0938 - val_loss: 212215414784.0000 -
val_mean_absolute_error: 303711.7812
Epoch 124/500
219/219 - 1s - 6ms/step - loss: 212710244352.0000 -
mean_absolute_error: 306664.4688 - val_loss: 210014699520.0000 -
val_mean_absolute_error: 300606.0938
Epoch 125/500
219/219 - 1s - 4ms/step - loss: 210491441152.0000 -
mean_absolute_error: 303563.4688 - val_loss: 207826288640.0000 -
val_mean_absolute_error: 297503.5625
Epoch 126/500
219/219 - 0s - 2ms/step - loss: 208281452544.0000 -
mean_absolute_error: 300459.3125 - val_loss: 205650722816.0000 -
val_mean_absolute_error: 294406.0312
Epoch 127/500
219/219 - 1s - 3ms/step - loss: 206084243456.0000 -
mean_absolute_error: 297338.8125 - val_loss: 203486560256.0000 -

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val_mean_absolute_error: 291315.3438
Epoch 128/500
219/219 - 1s - 3ms/step - loss: 203900272640.0000 -
mean_absolute_error: 294245.4062 - val_loss: 201331113984.0000 -
val_mean_absolute_error: 288233.6562
Epoch 129/500
219/219 - 0s - 2ms/step - loss: 201726099456.0000 -
mean_absolute_error: 291190.9688 - val_loss: 199199080448.0000 -
val_mean_absolute_error: 285179.1875
Epoch 130/500
219/219 - 1s - 3ms/step - loss: 199563198464.0000 -
mean_absolute_error: 288121.3125 - val_loss: 197066719232.0000 -
val_mean_absolute_error: 282118.1875
Epoch 131/500
219/219 - 1s - 3ms/step - loss: 197414305792.0000 -
mean_absolute_error: 285077.0938 - val_loss: 194954608640.0000 -
val_mean_absolute_error: 279087.7812
Epoch 132/500
219/219 - 0s - 2ms/step - loss: 195278422016.0000 -
mean_absolute_error: 282038.6875 - val_loss: 192853966848.0000 -
val_mean_absolute_error: 276075.5312
Epoch 133/500
219/219 - 0s - 2ms/step - loss: 193158250496.0000 -
mean_absolute_error: 279021.8750 - val_loss: 190773493760.0000 -
val_mean_absolute_error: 273091.6562
Epoch 134/500
219/219 - 1s - 3ms/step - loss: 191052562432.0000 -
mean_absolute_error: 276059.7812 - val_loss: 188698132480.0000 -
val_mean_absolute_error: 270125.2812
Epoch 135/500
219/219 - 0s - 2ms/step - loss: 188960358400.0000 -
mean_absolute_error: 273124.5625 - val_loss: 186640564224.0000 -
val_mean_absolute_error: 267187.7188
Epoch 136/500
219/219 - 1s - 3ms/step - loss: 186884177920.0000 -
mean_absolute_error: 270210.4062 - val_loss: 184607866880.0000 -
val_mean_absolute_error: 264295.9062
Epoch 137/500
219/219 - 1s - 3ms/step - loss: 184822923264.0000 -
mean_absolute_error: 267336.6875 - val_loss: 182582149120.0000 -
val_mean_absolute_error: 261424.7031
Epoch 138/500
219/219 - 1s - 3ms/step - loss: 182778986496.0000 -
mean_absolute_error: 264500.3125 - val_loss: 180577828864.0000 -
val_mean_absolute_error: 258589.3281
Epoch 139/500
219/219 - 1s - 3ms/step - loss: 180753629184.0000 -
mean_absolute_error: 261687.0625 - val_loss: 178594725888.0000 -
val_mean_absolute_error: 255797.7812
```

Epoch 140/500
219/219 - 1s - 3ms/step - loss: 178744803328.0000 -
mean_absolute_error: 258938.6562 - val_loss: 176622829568.0000 -
val_mean_absolute_error: 253035.7500
Epoch 141/500
219/219 - 1s - 4ms/step - loss: 176753704960.0000 -
mean_absolute_error: 256245.5938 - val_loss: 174672084992.0000 -
val_mean_absolute_error: 250315.8750
Epoch 142/500
219/219 - 1s - 7ms/step - loss: 174780841984.0000 -
mean_absolute_error: 253626.2031 - val_loss: 172738658304.0000 -
val_mean_absolute_error: 247639.6094
Epoch 143/500
219/219 - 1s - 6ms/step - loss: 172825378816.0000 -
mean_absolute_error: 251009.2031 - val_loss: 170828775424.0000 -
val_mean_absolute_error: 245017.7344
Epoch 144/500
219/219 - 1s - 6ms/step - loss: 170891149312.0000 -
mean_absolute_error: 248471.4219 - val_loss: 168936177664.0000 -
val_mean_absolute_error: 242448.7969
Epoch 145/500
219/219 - 1s - 5ms/step - loss: 168977547264.0000 -
mean_absolute_error: 245954.5625 - val_loss: 167063224320.0000 -
val_mean_absolute_error: 239925.7188
Epoch 146/500
219/219 - 1s - 5ms/step - loss: 167085096960.0000 -
mean_absolute_error: 243505.3125 - val_loss: 165208244224.0000 -
val_mean_absolute_error: 237464.1719
Epoch 147/500
219/219 - 1s - 4ms/step - loss: 165215027200.0000 -
mean_absolute_error: 241105.2500 - val_loss: 163386490880.0000 -
val_mean_absolute_error: 235080.8906
Epoch 148/500
219/219 - 1s - 3ms/step - loss: 163368108032.0000 -
mean_absolute_error: 238770.8594 - val_loss: 161578008576.0000 -
val_mean_absolute_error: 232749.5938
Epoch 149/500
219/219 - 1s - 3ms/step - loss: 161542782976.0000 -
mean_absolute_error: 236485.7969 - val_loss: 159795527680.0000 -
val_mean_absolute_error: 230480.0781
Epoch 150/500
219/219 - 0s - 2ms/step - loss: 159739920384.0000 -
mean_absolute_error: 234274.6094 - val_loss: 158038671360.0000 -
val_mean_absolute_error: 228288.3125
Epoch 151/500
219/219 - 0s - 2ms/step - loss: 157961256960.0000 -
mean_absolute_error: 232132.9219 - val_loss: 156303015936.0000 -
val_mean_absolute_error: 226143.3594
Epoch 152/500

219/219 - 1s - 3ms/step - loss: 156204023808.0000 -
mean_absolute_error: 230025.5312 - val_loss: 154597392384.0000 -
val_mean_absolute_error: 224062.0156
Epoch 153/500
219/219 - 1s - 3ms/step - loss: 154470219776.0000 -
mean_absolute_error: 228006.8281 - val_loss: 152907251712.0000 -
val_mean_absolute_error: 222036.5938
Epoch 154/500
219/219 - 1s - 3ms/step - loss: 152760139776.0000 -
mean_absolute_error: 226026.2969 - val_loss: 151245897728.0000 -
val_mean_absolute_error: 220064.8281
Epoch 155/500
219/219 - 1s - 3ms/step - loss: 151075913728.0000 -
mean_absolute_error: 224126.7969 - val_loss: 149610037248.0000 -
val_mean_absolute_error: 218158.0781
Epoch 156/500
219/219 - 1s - 3ms/step - loss: 149419917312.0000 -
mean_absolute_error: 222260.5000 - val_loss: 148008058880.0000 -
val_mean_absolute_error: 216333.6562
Epoch 157/500
219/219 - 0s - 2ms/step - loss: 147791527936.0000 -
mean_absolute_error: 220479.1562 - val_loss: 146418122752.0000 -
val_mean_absolute_error: 214556.2031
Epoch 158/500
219/219 - 0s - 2ms/step - loss: 146187436032.0000 -
mean_absolute_error: 218729.8438 - val_loss: 144863887360.0000 -
val_mean_absolute_error: 212857.0469
Epoch 159/500
219/219 - 1s - 3ms/step - loss: 144611852288.0000 -
mean_absolute_error: 217051.5000 - val_loss: 143340208128.0000 -
val_mean_absolute_error: 211231.1719
Epoch 160/500
219/219 - 0s - 2ms/step - loss: 143064236032.0000 -
mean_absolute_error: 215441.4688 - val_loss: 141841301504.0000 -
val_mean_absolute_error: 209679.9219
Epoch 161/500
219/219 - 0s - 2ms/step - loss: 141545521152.0000 -
mean_absolute_error: 213889.5312 - val_loss: 140370624512.0000 -
val_mean_absolute_error: 208204.6875
Epoch 162/500
219/219 - 0s - 2ms/step - loss: 140054462464.0000 -
mean_absolute_error: 212384.1719 - val_loss: 138933288960.0000 -
val_mean_absolute_error: 206790.1250
Epoch 163/500
219/219 - 1s - 4ms/step - loss: 138591010816.0000 -
mean_absolute_error: 210942.8594 - val_loss: 137512288256.0000 -
val_mean_absolute_error: 205414.3438
Epoch 164/500
219/219 - 1s - 6ms/step - loss: 137154519040.0000 -

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mean_absolute_error: 209566.4219 - val_loss: 136135311360.0000 -  
val_mean_absolute_error: 204128.2812  
Epoch 165/500  
219/219 - 1s - 4ms/step - loss: 135747813376.0000 -  
mean_absolute_error: 208237.2188 - val_loss: 134778814464.0000 -  
val_mean_absolute_error: 202903.6406  
Epoch 166/500  
219/219 - 1s - 5ms/step - loss: 134372687872.0000 -  
mean_absolute_error: 207006.0938 - val_loss: 133454209024.0000 -  
val_mean_absolute_error: 201743.5312  
Epoch 167/500  
219/219 - 0s - 2ms/step - loss: 133029249024.0000 -  
mean_absolute_error: 205801.0000 - val_loss: 132167458816.0000 -  
val_mean_absolute_error: 200646.2344  
Epoch 168/500  
219/219 - 1s - 3ms/step - loss: 131718873088.0000 -  
mean_absolute_error: 204664.2969 - val_loss: 130901745664.0000 -  
val_mean_absolute_error: 199595.0156  
Epoch 169/500  
219/219 - 0s - 2ms/step - loss: 130437283840.0000 -  
mean_absolute_error: 203611.7344 - val_loss: 129677860864.0000 -  
val_mean_absolute_error: 198631.8906  
Epoch 170/500  
219/219 - 0s - 2ms/step - loss: 129188356096.0000 -  
mean_absolute_error: 202596.9844 - val_loss: 128482238464.0000 -  
val_mean_absolute_error: 197728.1094  
Epoch 171/500  
219/219 - 1s - 3ms/step - loss: 127970992128.0000 -  
mean_absolute_error: 201634.3906 - val_loss: 127312273408.0000 -  
val_mean_absolute_error: 196877.5000  
Epoch 172/500  
219/219 - 0s - 2ms/step - loss: 126786273280.0000 -  
mean_absolute_error: 200759.7656 - val_loss: 126177681408.0000 -  
val_mean_absolute_error: 196092.7188  
Epoch 173/500  
219/219 - 0s - 2ms/step - loss: 125637287936.0000 -  
mean_absolute_error: 199946.1719 - val_loss: 125088751616.0000 -  
val_mean_absolute_error: 195366.2656  
Epoch 174/500  
219/219 - 1s - 3ms/step - loss: 124520202240.0000 -  
mean_absolute_error: 199207.3750 - val_loss: 124021121024.0000 -  
val_mean_absolute_error: 194689.4688  
Epoch 175/500  
219/219 - 1s - 3ms/step - loss: 123433279488.0000 -  
mean_absolute_error: 198506.0625 - val_loss: 122994073600.0000 -  
val_mean_absolute_error: 194083.1406  
Epoch 176/500  
219/219 - 1s - 3ms/step - loss: 122379034624.0000 -  
mean_absolute_error: 197857.3281 - val_loss: 121990160384.0000 -
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val_mean_absolute_error: 193524.6250
Epoch 177/500
219/219 - 1s - 3ms/step - loss: 121360080896.0000 -
mean_absolute_error: 197302.7031 - val_loss: 121023569920.0000 -
val_mean_absolute_error: 193027.2656
Epoch 178/500
219/219 - 1s - 3ms/step - loss: 120375181312.0000 -
mean_absolute_error: 196774.8594 - val_loss: 120097792000.0000 -
val_mean_absolute_error: 192592.1875
Epoch 179/500
219/219 - 1s - 3ms/step - loss: 119424040960.0000 -
mean_absolute_error: 196344.8750 - val_loss: 119198924800.0000 -
val_mean_absolute_error: 192223.4531
Epoch 180/500
219/219 - 1s - 3ms/step - loss: 118507773952.0000 -
mean_absolute_error: 195978.3750 - val_loss: 118335127552.0000 -
val_mean_absolute_error: 191928.1875
Epoch 181/500
219/219 - 1s - 3ms/step - loss: 117626519552.0000 -
mean_absolute_error: 195651.0469 - val_loss: 117509890048.0000 -
val_mean_absolute_error: 191690.6719
Epoch 182/500
219/219 - 1s - 3ms/step - loss: 116778893312.0000 -
mean_absolute_error: 195393.5312 - val_loss: 116714070016.0000 -
val_mean_absolute_error: 191502.9531
Epoch 183/500
219/219 - 1s - 4ms/step - loss: 115965198336.0000 -
mean_absolute_error: 195184.3438 - val_loss: 115955515392.0000 -
val_mean_absolute_error: 191356.1406
Epoch 184/500
219/219 - 1s - 6ms/step - loss: 115186917376.0000 -
mean_absolute_error: 195041.3125 - val_loss: 115232342016.0000 -
val_mean_absolute_error: 191255.0156
Epoch 185/500
219/219 - 1s - 6ms/step - loss: 114442018816.0000 -
mean_absolute_error: 194939.6875 - val_loss: 114536767488.0000 -
val_mean_absolute_error: 191199.9375
Epoch 186/500
219/219 - 1s - 5ms/step - loss: 113729159168.0000 -
mean_absolute_error: 194890.8125 - val_loss: 113882521600.0000 -
val_mean_absolute_error: 191192.5781
Epoch 187/500
219/219 - 1s - 3ms/step - loss: 113049952256.0000 -
mean_absolute_error: 194868.3750 - val_loss: 113253064704.0000 -
val_mean_absolute_error: 191227.0156
Epoch 188/500
219/219 - 0s - 2ms/step - loss: 112404430848.0000 -
mean_absolute_error: 194917.1719 - val_loss: 112659742720.0000 -
val_mean_absolute_error: 191300.3594
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Epoch 189/500
219/219 - 1s - 3ms/step - loss: 111792111616.0000 -
mean_absolute_error: 195007.9844 - val_loss: 112107044864.0000 -
val_mean_absolute_error: 191411.9219
Epoch 190/500
219/219 - 1s - 3ms/step - loss: 111212109824.0000 -
mean_absolute_error: 195140.6406 - val_loss: 111574171648.0000 -
val_mean_absolute_error: 191562.5156
Epoch 191/500
219/219 - 1s - 3ms/step - loss: 110665097216.0000 -
mean_absolute_error: 195314.7812 - val_loss: 111073075200.0000 -
val_mean_absolute_error: 191757.7031
Epoch 192/500
219/219 - 0s - 2ms/step - loss: 110149476352.0000 -
mean_absolute_error: 195540.5156 - val_loss: 110610227200.0000 -
val_mean_absolute_error: 191987.5781
Epoch 193/500
219/219 - 1s - 3ms/step - loss: 109663985664.0000 -
mean_absolute_error: 195799.2656 - val_loss: 110171873280.0000 -
val_mean_absolute_error: 192247.4844
Epoch 194/500
219/219 - 1s - 2ms/step - loss: 109209108480.0000 -
mean_absolute_error: 196072.6094 - val_loss: 109760339968.0000 -
val_mean_absolute_error: 192536.5469
Epoch 195/500
219/219 - 0s - 2ms/step - loss: 108784320512.0000 -
mean_absolute_error: 196378.8750 - val_loss: 109387202560.0000 -
val_mean_absolute_error: 192839.1406
Epoch 196/500
219/219 - 0s - 2ms/step - loss: 108387303424.0000 -
mean_absolute_error: 196700.0938 - val_loss: 109032923136.0000 -
val_mean_absolute_error: 193164.3594
Epoch 197/500
219/219 - 1s - 3ms/step - loss: 108018606080.0000 -
mean_absolute_error: 197027.7188 - val_loss: 108706766848.0000 -
val_mean_absolute_error: 193503.8750
Epoch 198/500
219/219 - 1s - 3ms/step - loss: 107674968064.0000 -
mean_absolute_error: 197401.6250 - val_loss: 108405915648.0000 -
val_mean_absolute_error: 193853.4844
Epoch 199/500
219/219 - 1s - 3ms/step - loss: 107354906624.0000 -
mean_absolute_error: 197777.5156 - val_loss: 108129443840.0000 -
val_mean_absolute_error: 194206.6562
Epoch 200/500
219/219 - 1s - 3ms/step - loss: 107057618944.0000 -
mean_absolute_error: 198142.5625 - val_loss: 107866505216.0000 -
val_mean_absolute_error: 194583.1250
Epoch 201/500

219/219 - 1s - 3ms/step - loss: 106781270016.0000 -
mean_absolute_error: 198531.4062 - val_loss: 107628322816.0000 -
val_mean_absolute_error: 194951.2969
Epoch 202/500
219/219 - 1s - 3ms/step - loss: 106523623424.0000 -
mean_absolute_error: 198892.0312 - val_loss: 107406721024.0000 -
val_mean_absolute_error: 195325.3281
Epoch 203/500
219/219 - 1s - 4ms/step - loss: 106285236224.0000 -
mean_absolute_error: 199296.1094 - val_loss: 107200413696.0000 -
val_mean_absolute_error: 195694.5938
Epoch 204/500
219/219 - 1s - 5ms/step - loss: 106065715200.0000 -
mean_absolute_error: 199615.8594 - val_loss: 107013570560.0000 -
val_mean_absolute_error: 196046.2969
Epoch 205/500
219/219 - 1s - 7ms/step - loss: 105861890048.0000 -
mean_absolute_error: 199992.2344 - val_loss: 106839752704.0000 -
val_mean_absolute_error: 196390.0781
Epoch 206/500
219/219 - 1s - 3ms/step - loss: 105672777728.0000 -
mean_absolute_error: 200313.7969 - val_loss: 106680131584.0000 -
val_mean_absolute_error: 196714.7344
Epoch 207/500
219/219 - 1s - 5ms/step - loss: 105496150016.0000 -
mean_absolute_error: 200631.1250 - val_loss: 106531315712.0000 -
val_mean_absolute_error: 197034.8438
Epoch 208/500
219/219 - 1s - 3ms/step - loss: 105332465664.0000 -
mean_absolute_error: 200965.5469 - val_loss: 106389389312.0000 -
val_mean_absolute_error: 197346.2344
Epoch 209/500
219/219 - 0s - 2ms/step - loss: 105178824704.0000 -
mean_absolute_error: 201253.2500 - val_loss: 106259750912.0000 -
val_mean_absolute_error: 197627.5156
Epoch 210/500
219/219 - 1s - 3ms/step - loss: 105034547200.0000 -
mean_absolute_error: 201545.5156 - val_loss: 106132979712.0000 -
val_mean_absolute_error: 197915.9219
Epoch 211/500
219/219 - 0s - 2ms/step - loss: 104896782336.0000 -
mean_absolute_error: 201766.3750 - val_loss: 106014826496.0000 -
val_mean_absolute_error: 198172.6719
Epoch 212/500
219/219 - 1s - 3ms/step - loss: 104765399040.0000 -
mean_absolute_error: 202008.2500 - val_loss: 105901531136.0000 -
val_mean_absolute_error: 198399.5156
Epoch 213/500
219/219 - 0s - 2ms/step - loss: 104639332352.0000 -

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mean_absolute_error: 202221.9375 - val_loss: 105792798720.0000 -  
val_mean_absolute_error: 198615.1875  
Epoch 214/500  
219/219 - 1s - 3ms/step - loss: 104518975488.0000 -  
mean_absolute_error: 202460.2188 - val_loss: 105686745088.0000 -  
val_mean_absolute_error: 198819.4531  
Epoch 215/500  
219/219 - 1s - 3ms/step - loss: 104403099648.0000 -  
mean_absolute_error: 202604.4375 - val_loss: 105586180096.0000 -  
val_mean_absolute_error: 198985.0625  
Epoch 216/500  
219/219 - 1s - 3ms/step - loss: 104290623488.0000 -  
mean_absolute_error: 202784.0781 - val_loss: 105485950976.0000 -  
val_mean_absolute_error: 199155.2500  
Epoch 217/500  
219/219 - 1s - 3ms/step - loss: 104180817920.0000 -  
mean_absolute_error: 202908.5312 - val_loss: 105389416448.0000 -  
val_mean_absolute_error: 199295.7656  
Epoch 218/500  
219/219 - 1s - 3ms/step - loss: 104074477568.0000 -  
mean_absolute_error: 203061.2969 - val_loss: 105293185024.0000 -  
val_mean_absolute_error: 199431.9219  
Epoch 219/500  
219/219 - 1s - 3ms/step - loss: 103970037760.0000 -  
mean_absolute_error: 203129.8906 - val_loss: 105200033792.0000 -  
val_mean_absolute_error: 199534.4062  
Epoch 220/500  
219/219 - 1s - 3ms/step - loss: 103868145664.0000 -  
mean_absolute_error: 203238.7031 - val_loss: 105106685952.0000 -  
val_mean_absolute_error: 199642.7500  
Epoch 221/500  
219/219 - 1s - 3ms/step - loss: 103768530944.0000 -  
mean_absolute_error: 203351.9688 - val_loss: 105015828480.0000 -  
val_mean_absolute_error: 199726.2656  
Epoch 222/500  
219/219 - 1s - 3ms/step - loss: 103669383168.0000 -  
mean_absolute_error: 203367.9531 - val_loss: 104925208576.0000 -  
val_mean_absolute_error: 199779.7188  
Epoch 223/500  
219/219 - 1s - 3ms/step - loss: 103572340736.0000 -  
mean_absolute_error: 203479.1719 - val_loss: 104835596288.0000 -  
val_mean_absolute_error: 199836.3125  
Epoch 224/500  
219/219 - 1s - 4ms/step - loss: 103475732480.0000 -  
mean_absolute_error: 203457.2188 - val_loss: 104745795584.0000 -  
val_mean_absolute_error: 199870.7031  
Epoch 225/500  
219/219 - 1s - 6ms/step - loss: 103379836928.0000 -  
mean_absolute_error: 203477.1562 - val_loss: 104656273408.0000 -
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val_mean_absolute_error: 199907.5781
Epoch 226/500
219/219 - 1s - 5ms/step - loss: 103284244480.0000 -
mean_absolute_error: 203526.6719 - val_loss: 104567390208.0000 -
val_mean_absolute_error: 199934.3594
Epoch 227/500
219/219 - 1s - 5ms/step - loss: 103190118400.0000 -
mean_absolute_error: 203543.2656 - val_loss: 104479465472.0000 -
val_mean_absolute_error: 199944.6875
Epoch 228/500
219/219 - 1s - 3ms/step - loss: 103097524224.0000 -
mean_absolute_error: 203541.4375 - val_loss: 104391000064.0000 -
val_mean_absolute_error: 199977.9844
Epoch 229/500
219/219 - 1s - 3ms/step - loss: 103005626368.0000 -
mean_absolute_error: 203532.0625 - val_loss: 104304926720.0000 -
val_mean_absolute_error: 199966.1719
Epoch 230/500
219/219 - 1s - 3ms/step - loss: 102914957312.0000 -
mean_absolute_error: 203543.6875 - val_loss: 104218968064.0000 -
val_mean_absolute_error: 199943.6562
Epoch 231/500
219/219 - 0s - 2ms/step - loss: 102825295872.0000 -
mean_absolute_error: 203558.8906 - val_loss: 104132403200.0000 -
val_mean_absolute_error: 199927.3438
Epoch 232/500
219/219 - 1s - 3ms/step - loss: 102734954496.0000 -
mean_absolute_error: 203523.4219 - val_loss: 104045805568.0000 -
val_mean_absolute_error: 199918.0938
Epoch 233/500
219/219 - 0s - 2ms/step - loss: 102644408320.0000 -
mean_absolute_error: 203465.4531 - val_loss: 103958601728.0000 -
val_mean_absolute_error: 199882.6250
Epoch 234/500
219/219 - 1s - 3ms/step - loss: 102553051136.0000 -
mean_absolute_error: 203403.6406 - val_loss: 103871381504.0000 -
val_mean_absolute_error: 199835.6406
Epoch 235/500
219/219 - 0s - 2ms/step - loss: 102463397888.0000 -
mean_absolute_error: 203329.7344 - val_loss: 103784112128.0000 -
val_mean_absolute_error: 199803.7344
Epoch 236/500
219/219 - 0s - 2ms/step - loss: 102372417536.0000 -
mean_absolute_error: 203336.3438 - val_loss: 103696736256.0000 -
val_mean_absolute_error: 199768.1562
Epoch 237/500
219/219 - 0s - 2ms/step - loss: 102282674176.0000 -
mean_absolute_error: 203275.0469 - val_loss: 103610105856.0000 -
val_mean_absolute_error: 199722.5781
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Epoch 238/500
219/219 - 1s - 3ms/step - loss: 102192480256.0000 -
mean_absolute_error: 203210.8125 - val_loss: 103522918400.0000 -
val_mean_absolute_error: 199660.9688
Epoch 239/500
219/219 - 1s - 2ms/step - loss: 102101794816.0000 -
mean_absolute_error: 203165.7500 - val_loss: 103435018240.0000 -
val_mean_absolute_error: 199623.9375
Epoch 240/500
219/219 - 0s - 2ms/step - loss: 102011420672.0000 -
mean_absolute_error: 203058.1562 - val_loss: 103347306496.0000 -
val_mean_absolute_error: 199527.3125
Epoch 241/500
219/219 - 1s - 3ms/step - loss: 101920776192.0000 -
mean_absolute_error: 203040.1094 - val_loss: 103259381760.0000 -
val_mean_absolute_error: 199489.0625
Epoch 242/500
219/219 - 1s - 3ms/step - loss: 101829910528.0000 -
mean_absolute_error: 202987.5781 - val_loss: 103170875392.0000 -
val_mean_absolute_error: 199441.3906
Epoch 243/500
219/219 - 1s - 3ms/step - loss: 101739454464.0000 -
mean_absolute_error: 202857.5781 - val_loss: 103081828352.0000 -
val_mean_absolute_error: 199364.2031
Epoch 244/500
219/219 - 1s - 3ms/step - loss: 101647908864.0000 -
mean_absolute_error: 202806.1094 - val_loss: 102993166336.0000 -
val_mean_absolute_error: 199294.5000
Epoch 245/500
219/219 - 1s - 6ms/step - loss: 101557100544.0000 -
mean_absolute_error: 202766.9375 - val_loss: 102904561664.0000 -
val_mean_absolute_error: 199219.2656
Epoch 246/500
219/219 - 1s - 6ms/step - loss: 101466349568.0000 -
mean_absolute_error: 202632.0938 - val_loss: 102815154176.0000 -
val_mean_absolute_error: 199146.0000
Epoch 247/500
219/219 - 1s - 4ms/step - loss: 101374361600.0000 -
mean_absolute_error: 202566.4375 - val_loss: 102725943296.0000 -
val_mean_absolute_error: 199066.5312
Epoch 248/500
219/219 - 1s - 3ms/step - loss: 101282095104.0000 -
mean_absolute_error: 202473.1250 - val_loss: 102635749376.0000 -
val_mean_absolute_error: 199008.7500
Epoch 249/500
219/219 - 0s - 2ms/step - loss: 101191065600.0000 -
mean_absolute_error: 202361.8594 - val_loss: 102545932288.0000 -
val_mean_absolute_error: 198937.0625
Epoch 250/500

219/219 - 1s - 3ms/step - loss: 101098512384.0000 -
mean_absolute_error: 202339.8750 - val_loss: 102456754176.0000 -
val_mean_absolute_error: 198857.6875
Epoch 251/500
219/219 - 1s - 3ms/step - loss: 101007384576.0000 -
mean_absolute_error: 202287.2656 - val_loss: 102367264768.0000 -
val_mean_absolute_error: 198766.9531
Epoch 252/500
219/219 - 1s - 3ms/step - loss: 100916043776.0000 -
mean_absolute_error: 202147.0156 - val_loss: 102278324224.0000 -
val_mean_absolute_error: 198671.1250
Epoch 253/500
219/219 - 1s - 3ms/step - loss: 100824481792.0000 -
mean_absolute_error: 202026.4062 - val_loss: 102188253184.0000 -
val_mean_absolute_error: 198581.8594
Epoch 254/500
219/219 - 1s - 3ms/step - loss: 100733280256.0000 -
mean_absolute_error: 201962.0156 - val_loss: 102097715200.0000 -
val_mean_absolute_error: 198508.5000
Epoch 255/500
219/219 - 1s - 3ms/step - loss: 100641234944.0000 -
mean_absolute_error: 201883.8125 - val_loss: 102007799808.0000 -
val_mean_absolute_error: 198409.8594
Epoch 256/500
219/219 - 1s - 3ms/step - loss: 100549607424.0000 -
mean_absolute_error: 201795.7812 - val_loss: 101918375936.0000 -
val_mean_absolute_error: 198347.1406
Epoch 257/500
219/219 - 0s - 2ms/step - loss: 100458012672.0000 -
mean_absolute_error: 201650.1406 - val_loss: 101828247552.0000 -
val_mean_absolute_error: 198265.9219
Epoch 258/500
219/219 - 1s - 3ms/step - loss: 100366270464.0000 -
mean_absolute_error: 201589.0625 - val_loss: 101738487808.0000 -
val_mean_absolute_error: 198153.9844
Epoch 259/500
219/219 - 1s - 3ms/step - loss: 100275380224.0000 -
mean_absolute_error: 201471.8281 - val_loss: 101648900096.0000 -
val_mean_absolute_error: 198069.1562
Epoch 260/500
219/219 - 1s - 3ms/step - loss: 100183752704.0000 -
mean_absolute_error: 201421.5469 - val_loss: 101559738368.0000 -
val_mean_absolute_error: 197995.3281
Epoch 261/500
219/219 - 1s - 3ms/step - loss: 100093255680.0000 -
mean_absolute_error: 201352.5938 - val_loss: 101470461952.0000 -
val_mean_absolute_error: 197888.2500
Epoch 262/500
219/219 - 1s - 3ms/step - loss: 100002373632.0000 -
mean_absolute_error: 201175.6406 - val_loss: 101380620288.0000 -

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val_mean_absolute_error: 197797.8438
Epoch 263/500
219/219 - 1s - 5ms/step - loss: 99910647808.0000 -
mean_absolute_error: 201110.7500 - val_loss: 101291524096.0000 -
val_mean_absolute_error: 197718.0312
Epoch 264/500
219/219 - 1s - 4ms/step - loss: 99820478464.0000 -
mean_absolute_error: 201082.8281 - val_loss: 101202591744.0000 -
val_mean_absolute_error: 197627.2188
Epoch 265/500
219/219 - 1s - 4ms/step - loss: 99730137088.0000 -
mean_absolute_error: 200972.6562 - val_loss: 101113487360.0000 -
val_mean_absolute_error: 197547.6719
Epoch 266/500
219/219 - 1s - 6ms/step - loss: 99638894592.0000 -
mean_absolute_error: 200800.7656 - val_loss: 101023825920.0000 -
val_mean_absolute_error: 197417.6406
Epoch 267/500
219/219 - 1s - 4ms/step - loss: 99548233728.0000 -
mean_absolute_error: 200779.6094 - val_loss: 100934787072.0000 -
val_mean_absolute_error: 197341.3906
Epoch 268/500
219/219 - 1s - 3ms/step - loss: 99457179648.0000 -
mean_absolute_error: 200664.2344 - val_loss: 100844724224.0000 -
val_mean_absolute_error: 197238.2344
Epoch 269/500
219/219 - 1s - 5ms/step - loss: 99366232064.0000 -
mean_absolute_error: 200556.8438 - val_loss: 100755783680.0000 -
val_mean_absolute_error: 197161.7344
Epoch 270/500
219/219 - 1s - 5ms/step - loss: 99275702272.0000 -
mean_absolute_error: 200468.5312 - val_loss: 100665745408.0000 -
val_mean_absolute_error: 197064.7656
Epoch 271/500
219/219 - 0s - 2ms/step - loss: 99183771648.0000 -
mean_absolute_error: 200331.1875 - val_loss: 100575617024.0000 -
val_mean_absolute_error: 196949.4375
Epoch 272/500
219/219 - 1s - 3ms/step - loss: 99092422656.0000 -
mean_absolute_error: 200207.1094 - val_loss: 100485718016.0000 -
val_mean_absolute_error: 196858.0938
Epoch 273/500
219/219 - 1s - 3ms/step - loss: 99000950784.0000 -
mean_absolute_error: 200093.2344 - val_loss: 100395163648.0000 -
val_mean_absolute_error: 196743.5312
Epoch 274/500
219/219 - 0s - 2ms/step - loss: 98909134848.0000 -
mean_absolute_error: 200053.4531 - val_loss: 100305674240.0000 -
val_mean_absolute_error: 196678.6406
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Epoch 275/500
219/219 - 1s - 3ms/step - loss: 98819080192.0000 -
mean_absolute_error: 199925.8906 - val_loss: 100217135104.0000 -
val_mean_absolute_error: 196607.2031
Epoch 276/500
219/219 - 1s - 3ms/step - loss: 98727911424.0000 -
mean_absolute_error: 199877.8906 - val_loss: 100126924800.0000 -
val_mean_absolute_error: 196511.3750
Epoch 277/500
219/219 - 1s - 3ms/step - loss: 98636505088.0000 -
mean_absolute_error: 199728.3906 - val_loss: 100036558848.0000 -
val_mean_absolute_error: 196387.8750
Epoch 278/500
219/219 - 1s - 3ms/step - loss: 98545819648.0000 -
mean_absolute_error: 199646.3750 - val_loss: 99946782720.0000 -
val_mean_absolute_error: 196318.1250
Epoch 279/500
219/219 - 0s - 2ms/step - loss: 98454011904.0000 -
mean_absolute_error: 199564.3594 - val_loss: 99856408576.0000 -
val_mean_absolute_error: 196186.5312
Epoch 280/500
219/219 - 1s - 3ms/step - loss: 98362064896.0000 -
mean_absolute_error: 199410.5938 - val_loss: 99766321152.0000 -
val_mean_absolute_error: 196078.8125
Epoch 281/500
219/219 - 1s - 3ms/step - loss: 98269782016.0000 -
mean_absolute_error: 199292.5625 - val_loss: 99675922432.0000 -
val_mean_absolute_error: 195970.5312
Epoch 282/500
219/219 - 1s - 3ms/step - loss: 98177900544.0000 -
mean_absolute_error: 199202.8594 - val_loss: 99585048576.0000 -
val_mean_absolute_error: 195908.6094
Epoch 283/500
219/219 - 1s - 6ms/step - loss: 98085642240.0000 -
mean_absolute_error: 199114.1719 - val_loss: 99494764544.0000 -
val_mean_absolute_error: 195812.7812
Epoch 284/500
219/219 - 1s - 7ms/step - loss: 97994129408.0000 -
mean_absolute_error: 199026.8125 - val_loss: 99403939840.0000 -
val_mean_absolute_error: 195699.9531
Epoch 285/500
219/219 - 1s - 4ms/step - loss: 97902100480.0000 -
mean_absolute_error: 198935.0156 - val_loss: 99313491968.0000 -
val_mean_absolute_error: 195615.4688
Epoch 286/500
219/219 - 1s - 3ms/step - loss: 97809932288.0000 -
mean_absolute_error: 198823.0469 - val_loss: 99223093248.0000 -
val_mean_absolute_error: 195515.5000
Epoch 287/500

219/219 - 0s - 2ms/step - loss: 97717846016.0000 -
mean_absolute_error: 198735.4375 - val_loss: 99132104704.0000 -
val_mean_absolute_error: 195404.2188
Epoch 288/500
219/219 - 0s - 2ms/step - loss: 97625538560.0000 -
mean_absolute_error: 198644.7188 - val_loss: 99040739328.0000 -
val_mean_absolute_error: 195321.1250
Epoch 289/500
219/219 - 1s - 3ms/step - loss: 97533689856.0000 -
mean_absolute_error: 198539.7812 - val_loss: 98950004736.0000 -
val_mean_absolute_error: 195225.3281
Epoch 290/500
219/219 - 1s - 3ms/step - loss: 97441652736.0000 -
mean_absolute_error: 198427.0625 - val_loss: 98859679744.0000 -
val_mean_absolute_error: 195106.6875
Epoch 291/500
219/219 - 1s - 3ms/step - loss: 97349795840.0000 -
mean_absolute_error: 198281.5156 - val_loss: 98769641472.0000 -
val_mean_absolute_error: 195018.2031
Epoch 292/500
219/219 - 1s - 3ms/step - loss: 97258364928.0000 -
mean_absolute_error: 198191.9219 - val_loss: 98679783424.0000 -
val_mean_absolute_error: 194904.2969
Epoch 293/500
219/219 - 1s - 3ms/step - loss: 97167327232.0000 -
mean_absolute_error: 198082.2188 - val_loss: 98589720576.0000 -
val_mean_absolute_error: 194817.0469
Epoch 294/500
219/219 - 1s - 3ms/step - loss: 97075494912.0000 -
mean_absolute_error: 197974.1250 - val_loss: 98499076096.0000 -
val_mean_absolute_error: 194694.9375
Epoch 295/500
219/219 - 0s - 2ms/step - loss: 96983834624.0000 -
mean_absolute_error: 197837.5312 - val_loss: 98409242624.0000 -
val_mean_absolute_error: 194596.3125
Epoch 296/500
219/219 - 0s - 2ms/step - loss: 96893050880.0000 -
mean_absolute_error: 197752.0938 - val_loss: 98319294464.0000 -
val_mean_absolute_error: 194497.3594
Epoch 297/500
219/219 - 0s - 2ms/step - loss: 96801832960.0000 -
mean_absolute_error: 197687.7031 - val_loss: 98229772288.0000 -
val_mean_absolute_error: 194423.9844
Epoch 298/500
219/219 - 0s - 2ms/step - loss: 96710197248.0000 -
mean_absolute_error: 197537.8594 - val_loss: 98138349568.0000 -
val_mean_absolute_error: 194315.2656
Epoch 299/500
219/219 - 1s - 3ms/step - loss: 96617881600.0000 -

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mean_absolute_error: 197458.4844 - val_loss: 98047729664.0000 -  
val_mean_absolute_error: 194176.6250  
Epoch 300/500  
219/219 - 1s - 3ms/step - loss: 96524894208.0000 -  
mean_absolute_error: 197319.7500 - val_loss: 97957052416.0000 -  
val_mean_absolute_error: 194113.5781  
Epoch 301/500  
219/219 - 1s - 3ms/step - loss: 96433979392.0000 -  
mean_absolute_error: 197227.3594 - val_loss: 97866588160.0000 -  
val_mean_absolute_error: 194010.9844  
Epoch 302/500  
219/219 - 0s - 2ms/step - loss: 96341803008.0000 -  
mean_absolute_error: 197133.3594 - val_loss: 97775869952.0000 -  
val_mean_absolute_error: 193898.3281  
Epoch 303/500  
219/219 - 1s - 4ms/step - loss: 96249593856.0000 -  
mean_absolute_error: 197018.9688 - val_loss: 97685176320.0000 -  
val_mean_absolute_error: 193806.3125  
Epoch 304/500  
219/219 - 1s - 6ms/step - loss: 96157253632.0000 -  
mean_absolute_error: 196910.7500 - val_loss: 97592918016.0000 -  
val_mean_absolute_error: 193701.7031  
Epoch 305/500  
219/219 - 1s - 6ms/step - loss: 96063823872.0000 -  
mean_absolute_error: 196809.4844 - val_loss: 97500938240.0000 -  
val_mean_absolute_error: 193582.8750  
Epoch 306/500  
219/219 - 1s - 3ms/step - loss: 95969599488.0000 -  
mean_absolute_error: 196690.1250 - val_loss: 97408057344.0000 -  
val_mean_absolute_error: 193503.9219  
Epoch 307/500  
219/219 - 1s - 2ms/step - loss: 95874883584.0000 -  
mean_absolute_error: 196570.8438 - val_loss: 97315291136.0000 -  
val_mean_absolute_error: 193383.4219  
Epoch 308/500  
219/219 - 1s - 3ms/step - loss: 95780847616.0000 -  
mean_absolute_error: 196507.6406 - val_loss: 97222303744.0000 -  
val_mean_absolute_error: 193275.0781  
Epoch 309/500  
219/219 - 0s - 2ms/step - loss: 95686352896.0000 -  
mean_absolute_error: 196354.3281 - val_loss: 97129578496.0000 -  
val_mean_absolute_error: 193207.8281  
Epoch 310/500  
219/219 - 1s - 3ms/step - loss: 95592415232.0000 -  
mean_absolute_error: 196232.3750 - val_loss: 97037795328.0000 -  
val_mean_absolute_error: 193061.5469  
Epoch 311/500  
219/219 - 1s - 3ms/step - loss: 95500091392.0000 -  
mean_absolute_error: 196169.8906 - val_loss: 96946552832.0000 -
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val_mean_absolute_error: 193004.9844
Epoch 312/500
219/219 - 0s - 2ms/step - loss: 95407620096.0000 -
mean_absolute_error: 196049.5781 - val_loss: 96854982656.0000 -
val_mean_absolute_error: 192906.7344
Epoch 313/500
219/219 - 0s - 2ms/step - loss: 95313715200.0000 -
mean_absolute_error: 195928.6875 - val_loss: 96763428864.0000 -
val_mean_absolute_error: 192769.3906
Epoch 314/500
219/219 - 0s - 2ms/step - loss: 95220940800.0000 -
mean_absolute_error: 195838.4062 - val_loss: 96671490048.0000 -
val_mean_absolute_error: 192657.8281
Epoch 315/500
219/219 - 0s - 2ms/step - loss: 95127838720.0000 -
mean_absolute_error: 195737.8906 - val_loss: 96579698688.0000 -
val_mean_absolute_error: 192584.6406
Epoch 316/500
219/219 - 1s - 3ms/step - loss: 95034220544.0000 -
mean_absolute_error: 195601.6562 - val_loss: 96487972864.0000 -
val_mean_absolute_error: 192492.2188
Epoch 317/500
219/219 - 1s - 3ms/step - loss: 94941102080.0000 -
mean_absolute_error: 195461.0156 - val_loss: 96395206656.0000 -
val_mean_absolute_error: 192354.7500
Epoch 318/500
219/219 - 0s - 2ms/step - loss: 94847434752.0000 -
mean_absolute_error: 195368.7344 - val_loss: 96303611904.0000 -
val_mean_absolute_error: 192254.2656
Epoch 319/500
219/219 - 1s - 3ms/step - loss: 94754463744.0000 -
mean_absolute_error: 195301.1719 - val_loss: 96212713472.0000 -
val_mean_absolute_error: 192194.4375
Epoch 320/500
219/219 - 1s - 3ms/step - loss: 94661804032.0000 -
mean_absolute_error: 195216.7656 - val_loss: 96121151488.0000 -
val_mean_absolute_error: 192059.0781
Epoch 321/500
219/219 - 1s - 2ms/step - loss: 94568988672.0000 -
mean_absolute_error: 195026.9062 - val_loss: 96029081600.0000 -
val_mean_absolute_error: 191932.2188
Epoch 322/500
219/219 - 1s - 3ms/step - loss: 94475526144.0000 -
mean_absolute_error: 194971.0469 - val_loss: 95937486848.0000 -
val_mean_absolute_error: 191856.2969
Epoch 323/500
219/219 - 1s - 3ms/step - loss: 94382350336.0000 -
mean_absolute_error: 194889.1094 - val_loss: 95845023744.0000 -
val_mean_absolute_error: 191755.3906
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Epoch 324/500
219/219 - 1s - 4ms/step - loss: 94289231872.0000 -
mean_absolute_error: 194751.7969 - val_loss: 95753936896.0000 -
val_mean_absolute_error: 191642.4062
Epoch 325/500
219/219 - 1s - 3ms/step - loss: 94196645888.0000 -
mean_absolute_error: 194653.7344 - val_loss: 95662915584.0000 -
val_mean_absolute_error: 191549.0625
Epoch 326/500
219/219 - 1s - 3ms/step - loss: 94103977984.0000 -
mean_absolute_error: 194556.7812 - val_loss: 95570796544.0000 -
val_mean_absolute_error: 191444.8594
Epoch 327/500
219/219 - 1s - 4ms/step - loss: 94011244544.0000 -
mean_absolute_error: 194424.6875 - val_loss: 95479570432.0000 -
val_mean_absolute_error: 191329.0000
Epoch 328/500
219/219 - 1s - 4ms/step - loss: 93918781440.0000 -
mean_absolute_error: 194307.6406 - val_loss: 95388401664.0000 -
val_mean_absolute_error: 191223.6094
Epoch 329/500
219/219 - 1s - 3ms/step - loss: 93826113536.0000 -
mean_absolute_error: 194211.7812 - val_loss: 95297519616.0000 -
val_mean_absolute_error: 191117.9531
Epoch 330/500
219/219 - 0s - 2ms/step - loss: 93733634048.0000 -
mean_absolute_error: 194047.3750 - val_loss: 95206342656.0000 -
val_mean_absolute_error: 190991.5469
Epoch 331/500
219/219 - 1s - 3ms/step - loss: 93640638464.0000 -
mean_absolute_error: 193929.8906 - val_loss: 95114297344.0000 -
val_mean_absolute_error: 190892.5625
Epoch 332/500
219/219 - 1s - 3ms/step - loss: 93547831296.0000 -
mean_absolute_error: 193850.0938 - val_loss: 95022686208.0000 -
val_mean_absolute_error: 190813.8594
Epoch 333/500
219/219 - 0s - 2ms/step - loss: 93454942208.0000 -
mean_absolute_error: 193806.1562 - val_loss: 94931853312.0000 -
val_mean_absolute_error: 190708.7188
Epoch 334/500
219/219 - 0s - 2ms/step - loss: 93362733056.0000 -
mean_absolute_error: 193683.9688 - val_loss: 94839914496.0000 -
val_mean_absolute_error: 190587.6094
Epoch 335/500
219/219 - 0s - 2ms/step - loss: 93269745664.0000 -
mean_absolute_error: 193521.4375 - val_loss: 94748008448.0000 -
val_mean_absolute_error: 190474.8438
Epoch 336/500

219/219 - 1s - 3ms/step - loss: 93175824384.0000 -
mean_absolute_error: 193411.6719 - val_loss: 94655275008.0000 -
val_mean_absolute_error: 190378.9688
Epoch 337/500
219/219 - 0s - 2ms/step - loss: 93082607616.0000 -
mean_absolute_error: 193308.7500 - val_loss: 94563123200.0000 -
val_mean_absolute_error: 190274.9375
Epoch 338/500
219/219 - 0s - 2ms/step - loss: 92988923904.0000 -
mean_absolute_error: 193166.4531 - val_loss: 94471151616.0000 -
val_mean_absolute_error: 190128.9531
Epoch 339/500
219/219 - 0s - 2ms/step - loss: 92896903168.0000 -
mean_absolute_error: 193059.5312 - val_loss: 94380810240.0000 -
val_mean_absolute_error: 190039.9531
Epoch 340/500
219/219 - 1s - 3ms/step - loss: 92804390912.0000 -
mean_absolute_error: 193012.0000 - val_loss: 94290747392.0000 -
val_mean_absolute_error: 189973.2656
Epoch 341/500
219/219 - 1s - 3ms/step - loss: 92714106880.0000 -
mean_absolute_error: 192865.2656 - val_loss: 94200848384.0000 -
val_mean_absolute_error: 189859.9688
Epoch 342/500
219/219 - 0s - 2ms/step - loss: 92622618624.0000 -
mean_absolute_error: 192744.3125 - val_loss: 94110654464.0000 -
val_mean_absolute_error: 189729.0312
Epoch 343/500
219/219 - 0s - 2ms/step - loss: 92531433472.0000 -
mean_absolute_error: 192615.4844 - val_loss: 94020927488.0000 -
val_mean_absolute_error: 189639.1250
Epoch 344/500
219/219 - 1s - 3ms/step - loss: 92439797760.0000 -
mean_absolute_error: 192553.0312 - val_loss: 93929201664.0000 -
val_mean_absolute_error: 189536.0000
Epoch 345/500
219/219 - 0s - 2ms/step - loss: 92346155008.0000 -
mean_absolute_error: 192424.0938 - val_loss: 93837967360.0000 -
val_mean_absolute_error: 189433.5312
Epoch 346/500
219/219 - 1s - 3ms/step - loss: 92253110272.0000 -
mean_absolute_error: 192351.6406 - val_loss: 93745184768.0000 -
val_mean_absolute_error: 189322.9844
Epoch 347/500
219/219 - 1s - 3ms/step - loss: 92159729664.0000 -
mean_absolute_error: 192186.2812 - val_loss: 93653630976.0000 -
val_mean_absolute_error: 189221.6094
Epoch 348/500
219/219 - 1s - 4ms/step - loss: 92066947072.0000 -

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mean_absolute_error: 192065.0000 - val_loss: 93562880000.0000 -  
val_mean_absolute_error: 189102.3125  
Epoch 349/500  
219/219 - 1s - 6ms/step - loss: 91974836224.0000 -  
mean_absolute_error: 191965.0000 - val_loss: 93471342592.0000 -  
val_mean_absolute_error: 188985.2969  
Epoch 350/500  
219/219 - 1s - 5ms/step - loss: 91883257856.0000 -  
mean_absolute_error: 191841.1406 - val_loss: 93380968448.0000 -  
val_mean_absolute_error: 188908.3594  
Epoch 351/500  
219/219 - 1s - 4ms/step - loss: 91789844480.0000 -  
mean_absolute_error: 191772.6875 - val_loss: 93289627648.0000 -  
val_mean_absolute_error: 188798.8125  
Epoch 352/500  
219/219 - 1s - 6ms/step - loss: 91697438720.0000 -  
mean_absolute_error: 191635.0000 - val_loss: 93197942784.0000 -  
val_mean_absolute_error: 188686.5781  
Epoch 353/500  
219/219 - 1s - 4ms/step - loss: 91604819968.0000 -  
mean_absolute_error: 191563.9531 - val_loss: 93106118656.0000 -  
val_mean_absolute_error: 188576.7031  
Epoch 354/500  
219/219 - 1s - 4ms/step - loss: 91512348672.0000 -  
mean_absolute_error: 191447.8594 - val_loss: 93015343104.0000 -  
val_mean_absolute_error: 188482.4062  
Epoch 355/500  
219/219 - 1s - 2ms/step - loss: 91419574272.0000 -  
mean_absolute_error: 191288.2031 - val_loss: 92923756544.0000 -  
val_mean_absolute_error: 188359.4688  
Epoch 356/500  
219/219 - 1s - 3ms/step - loss: 91326881792.0000 -  
mean_absolute_error: 191163.2344 - val_loss: 92832817152.0000 -  
val_mean_absolute_error: 188259.2188  
Epoch 357/500  
219/219 - 1s - 3ms/step - loss: 91235049472.0000 -  
mean_absolute_error: 191075.2500 - val_loss: 92741722112.0000 -  
val_mean_absolute_error: 188160.7031  
Epoch 358/500  
219/219 - 1s - 3ms/step - loss: 91142193152.0000 -  
mean_absolute_error: 190931.5000 - val_loss: 92650422272.0000 -  
val_mean_absolute_error: 188021.6562  
Epoch 359/500  
219/219 - 1s - 3ms/step - loss: 91050622976.0000 -  
mean_absolute_error: 190800.7188 - val_loss: 92559998976.0000 -  
val_mean_absolute_error: 187948.8281  
Epoch 360/500  
219/219 - 1s - 3ms/step - loss: 90957619200.0000 -  
mean_absolute_error: 190742.0312 - val_loss: 92469256192.0000 -
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val_mean_absolute_error: 187838.7656
Epoch 361/500
219/219 - 1s - 3ms/step - loss: 90864779264.0000 -
mean_absolute_error: 190647.5156 - val_loss: 92377497600.0000 -
val_mean_absolute_error: 187737.8281
Epoch 362/500
219/219 - 0s - 2ms/step - loss: 90772774912.0000 -
mean_absolute_error: 190582.0000 - val_loss: 92286369792.0000 -
val_mean_absolute_error: 187634.3281
Epoch 363/500
219/219 - 1s - 3ms/step - loss: 90679214080.0000 -
mean_absolute_error: 190434.5469 - val_loss: 92194758656.0000 -
val_mean_absolute_error: 187533.3906
Epoch 364/500
219/219 - 0s - 2ms/step - loss: 90586054656.0000 -
mean_absolute_error: 190334.2969 - val_loss: 92101017600.0000 -
val_mean_absolute_error: 187408.3438
Epoch 365/500
219/219 - 1s - 3ms/step - loss: 90491584512.0000 -
mean_absolute_error: 190203.4844 - val_loss: 92008218624.0000 -
val_mean_absolute_error: 187307.4844
Epoch 366/500
219/219 - 0s - 2ms/step - loss: 90397589504.0000 -
mean_absolute_error: 190048.0938 - val_loss: 91915624448.0000 -
val_mean_absolute_error: 187199.5469
Epoch 367/500
219/219 - 0s - 2ms/step - loss: 90302636032.0000 -
mean_absolute_error: 189978.4844 - val_loss: 91822424064.0000 -
val_mean_absolute_error: 187094.9062
Epoch 368/500
219/219 - 0s - 2ms/step - loss: 90209009664.0000 -
mean_absolute_error: 189864.0156 - val_loss: 91729911808.0000 -
val_mean_absolute_error: 186985.4219
Epoch 369/500
219/219 - 1s - 3ms/step - loss: 90114760704.0000 -
mean_absolute_error: 189771.5938 - val_loss: 91637440512.0000 -
val_mean_absolute_error: 186878.9062
Epoch 370/500
219/219 - 0s - 2ms/step - loss: 90021019648.0000 -
mean_absolute_error: 189673.6250 - val_loss: 91544854528.0000 -
val_mean_absolute_error: 186787.5625
Epoch 371/500
219/219 - 1s - 3ms/step - loss: 89926844416.0000 -
mean_absolute_error: 189530.1719 - val_loss: 91451432960.0000 -
val_mean_absolute_error: 186680.0469
Epoch 372/500
219/219 - 1s - 4ms/step - loss: 89832628224.0000 -
mean_absolute_error: 189378.0156 - val_loss: 91358502912.0000 -
val_mean_absolute_error: 186556.1562
```

Epoch 373/500
219/219 - 1s - 6ms/step - loss: 89738641408.0000 -
mean_absolute_error: 189271.6406 - val_loss: 91265482752.0000 -
val_mean_absolute_error: 186429.3750
Epoch 374/500
219/219 - 1s - 4ms/step - loss: 89644138496.0000 -
mean_absolute_error: 189158.5312 - val_loss: 91173355520.0000 -
val_mean_absolute_error: 186332.1562
Epoch 375/500
219/219 - 1s - 5ms/step - loss: 89550757888.0000 -
mean_absolute_error: 189070.7969 - val_loss: 91080605696.0000 -
val_mean_absolute_error: 186221.2344
Epoch 376/500
219/219 - 0s - 2ms/step - loss: 89456787456.0000 -
mean_absolute_error: 188917.9844 - val_loss: 90987536384.0000 -
val_mean_absolute_error: 186116.4375
Epoch 377/500
219/219 - 1s - 3ms/step - loss: 89362612224.0000 -
mean_absolute_error: 188820.1719 - val_loss: 90894368768.0000 -
val_mean_absolute_error: 186000.5312
Epoch 378/500
219/219 - 1s - 3ms/step - loss: 89268002816.0000 -
mean_absolute_error: 188666.8281 - val_loss: 90802069504.0000 -
val_mean_absolute_error: 185868.2188
Epoch 379/500
219/219 - 1s - 3ms/step - loss: 89173622784.0000 -
mean_absolute_error: 188608.3125 - val_loss: 90708516864.0000 -
val_mean_absolute_error: 185787.8594
Epoch 380/500
219/219 - 1s - 3ms/step - loss: 89080037376.0000 -
mean_absolute_error: 188443.7969 - val_loss: 90616905728.0000 -
val_mean_absolute_error: 185660.2500
Epoch 381/500
219/219 - 1s - 3ms/step - loss: 88986451968.0000 -
mean_absolute_error: 188361.3438 - val_loss: 90524385280.0000 -
val_mean_absolute_error: 185549.3281
Epoch 382/500
219/219 - 1s - 2ms/step - loss: 88892456960.0000 -
mean_absolute_error: 188228.6094 - val_loss: 90431004672.0000 -
val_mean_absolute_error: 185452.2031
Epoch 383/500
219/219 - 1s - 3ms/step - loss: 88797962240.0000 -
mean_absolute_error: 188103.2031 - val_loss: 90337665024.0000 -
val_mean_absolute_error: 185332.7500
Epoch 384/500
219/219 - 1s - 3ms/step - loss: 88702885888.0000 -
mean_absolute_error: 187980.5938 - val_loss: 90243751936.0000 -
val_mean_absolute_error: 185241.4062
Epoch 385/500

219/219 - 1s - 3ms/step - loss: 88607473664.0000 -
mean_absolute_error: 187859.0156 - val_loss: 90149117952.0000 -
val_mean_absolute_error: 185126.4844
Epoch 386/500
219/219 - 0s - 2ms/step - loss: 88511684608.0000 -
mean_absolute_error: 187766.4219 - val_loss: 90054901760.0000 -
val_mean_absolute_error: 184993.7031
Epoch 387/500
219/219 - 0s - 2ms/step - loss: 88416206848.0000 -
mean_absolute_error: 187680.5312 - val_loss: 89960783872.0000 -
val_mean_absolute_error: 184881.5938
Epoch 388/500
219/219 - 1s - 3ms/step - loss: 88320344064.0000 -
mean_absolute_error: 187521.6406 - val_loss: 89865723904.0000 -
val_mean_absolute_error: 184778.4375
Epoch 389/500
219/219 - 1s - 3ms/step - loss: 88224178176.0000 -
mean_absolute_error: 187382.8594 - val_loss: 89771524096.0000 -
val_mean_absolute_error: 184648.1875
Epoch 390/500
219/219 - 1s - 3ms/step - loss: 88128757760.0000 -
mean_absolute_error: 187304.4375 - val_loss: 89677783040.0000 -
val_mean_absolute_error: 184566.0312
Epoch 391/500
219/219 - 1s - 3ms/step - loss: 88034959360.0000 -
mean_absolute_error: 187140.7500 - val_loss: 89584893952.0000 -
val_mean_absolute_error: 184442.7031
Epoch 392/500
219/219 - 1s - 4ms/step - loss: 87940218880.0000 -
mean_absolute_error: 187036.6875 - val_loss: 89492119552.0000 -
val_mean_absolute_error: 184340.3281
Epoch 393/500
219/219 - 1s - 6ms/step - loss: 87845470208.0000 -
mean_absolute_error: 186941.6094 - val_loss: 89398575104.0000 -
val_mean_absolute_error: 184227.0312
Epoch 394/500
219/219 - 1s - 4ms/step - loss: 87750123520.0000 -
mean_absolute_error: 186819.0312 - val_loss: 89303736320.0000 -
val_mean_absolute_error: 184100.5156
Epoch 395/500
219/219 - 1s - 5ms/step - loss: 87654752256.0000 -
mean_absolute_error: 186678.1406 - val_loss: 89209749504.0000 -
val_mean_absolute_error: 183997.5000
Epoch 396/500
219/219 - 0s - 2ms/step - loss: 87558758400.0000 -
mean_absolute_error: 186595.4219 - val_loss: 89116155904.0000 -
val_mean_absolute_error: 183897.2344
Epoch 397/500
219/219 - 1s - 3ms/step - loss: 87463387136.0000 -
mean_absolute_error: 186440.0938 - val_loss: 89020555264.0000 -

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val_mean_absolute_error: 183787.1562
Epoch 398/500
219/219 - 0s - 2ms/step - loss: 87366672384.0000 -
mean_absolute_error: 186353.6875 - val_loss: 88925896704.0000 -
val_mean_absolute_error: 183658.4688
Epoch 399/500
219/219 - 0s - 2ms/step - loss: 87270694912.0000 -
mean_absolute_error: 186184.0625 - val_loss: 88832155648.0000 -
val_mean_absolute_error: 183549.2031
Epoch 400/500
219/219 - 0s - 2ms/step - loss: 87175651328.0000 -
mean_absolute_error: 186170.0625 - val_loss: 88737595392.0000 -
val_mean_absolute_error: 183479.5781
Epoch 401/500
219/219 - 0s - 2ms/step - loss: 87080050688.0000 -
mean_absolute_error: 186018.7969 - val_loss: 88643518464.0000 -
val_mean_absolute_error: 183325.6250
Epoch 402/500
219/219 - 0s - 2ms/step - loss: 86985834496.0000 -
mean_absolute_error: 185869.9531 - val_loss: 88549908480.0000 -
val_mean_absolute_error: 183207.6562
Epoch 403/500
219/219 - 1s - 3ms/step - loss: 86890536960.0000 -
mean_absolute_error: 185762.9844 - val_loss: 88456626176.0000 -
val_mean_absolute_error: 183103.9844
Epoch 404/500
219/219 - 1s - 3ms/step - loss: 86795517952.0000 -
mean_absolute_error: 185605.6719 - val_loss: 88361967616.0000 -
val_mean_absolute_error: 182978.3906
Epoch 405/500
219/219 - 0s - 2ms/step - loss: 86700670976.0000 -
mean_absolute_error: 185533.1719 - val_loss: 88268570624.0000 -
val_mean_absolute_error: 182876.3906
Epoch 406/500
219/219 - 1s - 3ms/step - loss: 86607036416.0000 -
mean_absolute_error: 185434.3906 - val_loss: 88176279552.0000 -
val_mean_absolute_error: 182754.7969
Epoch 407/500
219/219 - 0s - 2ms/step - loss: 86512902144.0000 -
mean_absolute_error: 185272.7812 - val_loss: 88083070976.0000 -
val_mean_absolute_error: 182633.4688
Epoch 408/500
219/219 - 1s - 3ms/step - loss: 86419308544.0000 -
mean_absolute_error: 185140.4375 - val_loss: 87990026240.0000 -
val_mean_absolute_error: 182521.8125
Epoch 409/500
219/219 - 0s - 2ms/step - loss: 86324985856.0000 -
mean_absolute_error: 184988.3750 - val_loss: 87896702976.0000 -
val_mean_absolute_error: 182401.1094
```

Epoch 410/500
219/219 - 1s - 3ms/step - loss: 86230794240.0000 -
mean_absolute_error: 184928.3125 - val_loss: 87803928576.0000 -
val_mean_absolute_error: 182303.9375
Epoch 411/500
219/219 - 1s - 3ms/step - loss: 86135939072.0000 -
mean_absolute_error: 184787.0781 - val_loss: 87709786112.0000 -
val_mean_absolute_error: 182182.1250
Epoch 412/500
219/219 - 0s - 2ms/step - loss: 86041690112.0000 -
mean_absolute_error: 184668.2344 - val_loss: 87616946176.0000 -
val_mean_absolute_error: 182076.5938
Epoch 413/500
219/219 - 1s - 3ms/step - loss: 85946540032.0000 -
mean_absolute_error: 184542.3125 - val_loss: 87523721216.0000 -
val_mean_absolute_error: 181966.0938
Epoch 414/500
219/219 - 1s - 4ms/step - loss: 85852856320.0000 -
mean_absolute_error: 184394.0312 - val_loss: 87430979584.0000 -
val_mean_absolute_error: 181842.1406
Epoch 415/500
219/219 - 1s - 5ms/step - loss: 85758918656.0000 -
mean_absolute_error: 184301.5625 - val_loss: 87338795008.0000 -
val_mean_absolute_error: 181737.4219
Epoch 416/500
219/219 - 1s - 7ms/step - loss: 85664989184.0000 -
mean_absolute_error: 184184.0156 - val_loss: 87246413824.0000 -
val_mean_absolute_error: 181602.6875
Epoch 417/500
219/219 - 1s - 4ms/step - loss: 85573419008.0000 -
mean_absolute_error: 184069.8438 - val_loss: 87154368512.0000 -
val_mean_absolute_error: 181466.7969
Epoch 418/500
219/219 - 1s - 3ms/step - loss: 85479522304.0000 -
mean_absolute_error: 183956.7188 - val_loss: 87063166976.0000 -
val_mean_absolute_error: 181386.9219
Epoch 419/500
219/219 - 0s - 2ms/step - loss: 85386608640.0000 -
mean_absolute_error: 183853.8438 - val_loss: 86970892288.0000 -
val_mean_absolute_error: 181269.6719
Epoch 420/500
219/219 - 1s - 3ms/step - loss: 85292679168.0000 -
mean_absolute_error: 183716.8125 - val_loss: 86878093312.0000 -
val_mean_absolute_error: 181146.0469
Epoch 421/500
219/219 - 1s - 3ms/step - loss: 85198249984.0000 -
mean_absolute_error: 183600.6562 - val_loss: 86785007616.0000 -
val_mean_absolute_error: 181039.7812
Epoch 422/500

219/219 - 0s - 2ms/step - loss: 85103935488.0000 -
mean_absolute_error: 183443.0938 - val_loss: 86691184640.0000 -
val_mean_absolute_error: 180908.2812
Epoch 423/500
219/219 - 1s - 3ms/step - loss: 85009702912.0000 -
mean_absolute_error: 183383.3906 - val_loss: 86598057984.0000 -
val_mean_absolute_error: 180821.5469
Epoch 424/500
219/219 - 1s - 3ms/step - loss: 84915863552.0000 -
mean_absolute_error: 183183.4219 - val_loss: 86505873408.0000 -
val_mean_absolute_error: 180686.2969
Epoch 425/500
219/219 - 1s - 3ms/step - loss: 84821942272.0000 -
mean_absolute_error: 183093.9219 - val_loss: 86413107200.0000 -
val_mean_absolute_error: 180591.7031
Epoch 426/500
219/219 - 0s - 2ms/step - loss: 84727816192.0000 -
mean_absolute_error: 182979.2031 - val_loss: 86320513024.0000 -
val_mean_absolute_error: 180484.7969
Epoch 427/500
219/219 - 0s - 2ms/step - loss: 84633862144.0000 -
mean_absolute_error: 182834.5000 - val_loss: 86227705856.0000 -
val_mean_absolute_error: 180352.5312
Epoch 428/500
219/219 - 0s - 2ms/step - loss: 84540112896.0000 -
mean_absolute_error: 182784.9844 - val_loss: 86135324672.0000 -
val_mean_absolute_error: 180262.6719
Epoch 429/500
219/219 - 1s - 3ms/step - loss: 84445577216.0000 -
mean_absolute_error: 182661.7656 - val_loss: 86041518080.0000 -
val_mean_absolute_error: 180125.2656
Epoch 430/500
219/219 - 1s - 3ms/step - loss: 84350402560.0000 -
mean_absolute_error: 182520.3594 - val_loss: 85947400192.0000 -
val_mean_absolute_error: 179998.2656
Epoch 431/500
219/219 - 0s - 2ms/step - loss: 84255162368.0000 -
mean_absolute_error: 182365.9844 - val_loss: 85852151808.0000 -
val_mean_absolute_error: 179890.9844
Epoch 432/500
219/219 - 0s - 2ms/step - loss: 84159152128.0000 -
mean_absolute_error: 182270.6094 - val_loss: 85758935040.0000 -
val_mean_absolute_error: 179782.4219
Epoch 433/500
219/219 - 1s - 3ms/step - loss: 84064190464.0000 -
mean_absolute_error: 182133.7656 - val_loss: 85665030144.0000 -
val_mean_absolute_error: 179633.9844
Epoch 434/500
219/219 - 1s - 3ms/step - loss: 83969531904.0000 -

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mean_absolute_error: 182048.6406 - val_loss: 85570207744.0000 -  
val_mean_absolute_error: 179542.4219  
Epoch 435/500  
219/219 - 1s - 4ms/step - loss: 83874332672.0000 -  
mean_absolute_error: 181885.6094 - val_loss: 85476524032.0000 -  
val_mean_absolute_error: 179415.1250  
Epoch 436/500  
219/219 - 1s - 6ms/step - loss: 83779100672.0000 -  
mean_absolute_error: 181735.7969 - val_loss: 85382029312.0000 -  
val_mean_absolute_error: 179298.7969  
Epoch 437/500  
219/219 - 1s - 6ms/step - loss: 83682967552.0000 -  
mean_absolute_error: 181601.8594 - val_loss: 85288411136.0000 -  
val_mean_absolute_error: 179208.6406  
Epoch 438/500  
219/219 - 1s - 4ms/step - loss: 83587629056.0000 -  
mean_absolute_error: 181536.6250 - val_loss: 85194293248.0000 -  
val_mean_absolute_error: 179095.1406  
Epoch 439/500  
219/219 - 1s - 3ms/step - loss: 83491438592.0000 -  
mean_absolute_error: 181382.9688 - val_loss: 85099995136.0000 -  
val_mean_absolute_error: 178974.5312  
Epoch 440/500  
219/219 - 1s - 3ms/step - loss: 83395936256.0000 -  
mean_absolute_error: 181266.4375 - val_loss: 85005590528.0000 -  
val_mean_absolute_error: 178863.3906  
Epoch 441/500  
219/219 - 1s - 3ms/step - loss: 83300737024.0000 -  
mean_absolute_error: 181194.8750 - val_loss: 84911947776.0000 -  
val_mean_absolute_error: 178735.0469  
Epoch 442/500  
219/219 - 0s - 2ms/step - loss: 83205988352.0000 -  
mean_absolute_error: 181011.9062 - val_loss: 84817797120.0000 -  
val_mean_absolute_error: 178588.5469  
Epoch 443/500  
219/219 - 1s - 3ms/step - loss: 83111452672.0000 -  
mean_absolute_error: 180967.6562 - val_loss: 84725071872.0000 -  
val_mean_absolute_error: 178503.9531  
Epoch 444/500  
219/219 - 1s - 3ms/step - loss: 83015933952.0000 -  
mean_absolute_error: 180801.3281 - val_loss: 84630487040.0000 -  
val_mean_absolute_error: 178371.1406  
Epoch 445/500  
219/219 - 1s - 3ms/step - loss: 82921545728.0000 -  
mean_absolute_error: 180638.0469 - val_loss: 84537180160.0000 -  
val_mean_absolute_error: 178247.0469  
Epoch 446/500  
219/219 - 0s - 2ms/step - loss: 82827558912.0000 -  
mean_absolute_error: 180541.5000 - val_loss: 84444241920.0000 -
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val_mean_absolute_error: 178134.9688
Epoch 447/500
219/219 - 0s - 2ms/step - loss: 82732810240.0000 -
mean_absolute_error: 180408.1719 - val_loss: 84350844928.0000 -
val_mean_absolute_error: 178024.3438
Epoch 448/500
219/219 - 1s - 3ms/step - loss: 82637979648.0000 -
mean_absolute_error: 180299.8438 - val_loss: 84257284096.0000 -
val_mean_absolute_error: 177890.3906
Epoch 449/500
219/219 - 1s - 3ms/step - loss: 82543616000.0000 -
mean_absolute_error: 180190.0312 - val_loss: 84163559424.0000 -
val_mean_absolute_error: 177787.4062
Epoch 450/500
219/219 - 1s - 3ms/step - loss: 82448269312.0000 -
mean_absolute_error: 180051.7656 - val_loss: 84068614144.0000 -
val_mean_absolute_error: 177664.8281
Epoch 451/500
219/219 - 1s - 2ms/step - loss: 82352881664.0000 -
mean_absolute_error: 179912.6562 - val_loss: 83974479872.0000 -
val_mean_absolute_error: 177555.6875
Epoch 452/500
219/219 - 1s - 2ms/step - loss: 82257641472.0000 -
mean_absolute_error: 179758.3125 - val_loss: 83880632320.0000 -
val_mean_absolute_error: 177408.2969
Epoch 453/500
219/219 - 0s - 2ms/step - loss: 82162130944.0000 -
mean_absolute_error: 179637.9844 - val_loss: 83786145792.0000 -
val_mean_absolute_error: 177296.9844
Epoch 454/500
219/219 - 1s - 3ms/step - loss: 82067161088.0000 -
mean_absolute_error: 179526.5781 - val_loss: 83692470272.0000 -
val_mean_absolute_error: 177184.5938
Epoch 455/500
219/219 - 1s - 4ms/step - loss: 81972666368.0000 -
mean_absolute_error: 179419.2031 - val_loss: 83599384576.0000 -
val_mean_absolute_error: 177075.8281
Epoch 456/500
219/219 - 1s - 6ms/step - loss: 81878384640.0000 -
mean_absolute_error: 179253.2188 - val_loss: 83506429952.0000 -
val_mean_absolute_error: 176944.5000
Epoch 457/500
219/219 - 1s - 6ms/step - loss: 81785225216.0000 -
mean_absolute_error: 179167.7500 - val_loss: 83414278144.0000 -
val_mean_absolute_error: 176803.7656
Epoch 458/500
219/219 - 1s - 3ms/step - loss: 81690173440.0000 -
mean_absolute_error: 178988.9531 - val_loss: 83320143872.0000 -
val_mean_absolute_error: 176695.7188
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Epoch 459/500
219/219 - 1s - 5ms/step - loss: 81595318272.0000 -
mean_absolute_error: 178859.8125 - val_loss: 83226525696.0000 -
val_mean_absolute_error: 176596.2188
Epoch 460/500
219/219 - 0s - 2ms/step - loss: 81500733440.0000 -
mean_absolute_error: 178802.8125 - val_loss: 83132882944.0000 -
val_mean_absolute_error: 176479.6094
Epoch 461/500
219/219 - 0s - 2ms/step - loss: 81406042112.0000 -
mean_absolute_error: 178667.7500 - val_loss: 83039944704.0000 -
val_mean_absolute_error: 176360.4531
Epoch 462/500
219/219 - 1s - 3ms/step - loss: 81310769152.0000 -
mean_absolute_error: 178536.9219 - val_loss: 82944802816.0000 -
val_mean_absolute_error: 176219.9375
Epoch 463/500
219/219 - 1s - 3ms/step - loss: 81215086592.0000 -
mean_absolute_error: 178384.4219 - val_loss: 82850979840.0000 -
val_mean_absolute_error: 176100.0781
Epoch 464/500
219/219 - 0s - 2ms/step - loss: 81120616448.0000 -
mean_absolute_error: 178281.8125 - val_loss: 82757238784.0000 -
val_mean_absolute_error: 175992.4531
Epoch 465/500
219/219 - 1s - 3ms/step - loss: 81026351104.0000 -
mean_absolute_error: 178069.5781 - val_loss: 82663833600.0000 -
val_mean_absolute_error: 175884.6406
Epoch 466/500
219/219 - 0s - 2ms/step - loss: 80931536896.0000 -
mean_absolute_error: 177956.9062 - val_loss: 82570608640.0000 -
val_mean_absolute_error: 175760.3281
Epoch 467/500
219/219 - 1s - 3ms/step - loss: 80837279744.0000 -
mean_absolute_error: 177879.0156 - val_loss: 82478350336.0000 -
val_mean_absolute_error: 175663.5156
Epoch 468/500
219/219 - 0s - 2ms/step - loss: 80743432192.0000 -
mean_absolute_error: 177756.7812 - val_loss: 82386132992.0000 -
val_mean_absolute_error: 175500.4219
Epoch 469/500
219/219 - 0s - 2ms/step - loss: 80650797056.0000 -
mean_absolute_error: 177595.5312 - val_loss: 82294382592.0000 -
val_mean_absolute_error: 175404.0625
Epoch 470/500
219/219 - 1s - 3ms/step - loss: 80558383104.0000 -
mean_absolute_error: 177476.7500 - val_loss: 82203344896.0000 -
val_mean_absolute_error: 175271.0781
Epoch 471/500

219/219 - 0s - 2ms/step - loss: 80466386944.0000 -
mean_absolute_error: 177336.6875 - val_loss: 82112741376.0000 -
val_mean_absolute_error: 175137.8594
Epoch 472/500
219/219 - 0s - 2ms/step - loss: 80373891072.0000 -
mean_absolute_error: 177226.2656 - val_loss: 82021449728.0000 -
val_mean_absolute_error: 175040.2500
Epoch 473/500
219/219 - 1s - 3ms/step - loss: 80280928256.0000 -
mean_absolute_error: 177163.9062 - val_loss: 81928609792.0000 -
val_mean_absolute_error: 174934.4688
Epoch 474/500
219/219 - 1s - 3ms/step - loss: 80187834368.0000 -
mean_absolute_error: 177002.8281 - val_loss: 81836040192.0000 -
val_mean_absolute_error: 174811.0625
Epoch 475/500
219/219 - 0s - 2ms/step - loss: 80094748672.0000 -
mean_absolute_error: 176875.4062 - val_loss: 81744224256.0000 -
val_mean_absolute_error: 174696.5156
Epoch 476/500
219/219 - 1s - 4ms/step - loss: 80001548288.0000 -
mean_absolute_error: 176705.1562 - val_loss: 81652899840.0000 -
val_mean_absolute_error: 174556.3594
Epoch 477/500
219/219 - 1s - 6ms/step - loss: 79909052416.0000 -
mean_absolute_error: 176630.4375 - val_loss: 81561059328.0000 -
val_mean_absolute_error: 174460.5156
Epoch 478/500
219/219 - 1s - 6ms/step - loss: 79816318976.0000 -
mean_absolute_error: 176452.5000 - val_loss: 81468956672.0000 -
val_mean_absolute_error: 174315.9531
Epoch 479/500
219/219 - 1s - 4ms/step - loss: 79723036672.0000 -
mean_absolute_error: 176394.0312 - val_loss: 81376911360.0000 -
val_mean_absolute_error: 174230.2031
Epoch 480/500
219/219 - 1s - 3ms/step - loss: 79629410304.0000 -
mean_absolute_error: 176253.5469 - val_loss: 81285095424.0000 -
val_mean_absolute_error: 174104.8281
Epoch 481/500
219/219 - 0s - 2ms/step - loss: 79536201728.0000 -
mean_absolute_error: 176147.1250 - val_loss: 81192476672.0000 -
val_mean_absolute_error: 173984.9219
Epoch 482/500
219/219 - 1s - 3ms/step - loss: 79443083264.0000 -
mean_absolute_error: 175990.7500 - val_loss: 81099743232.0000 -
val_mean_absolute_error: 173851.7656
Epoch 483/500
219/219 - 1s - 3ms/step - loss: 79349006336.0000 -


```
mean_absolute_error: 175847.1875 - val_loss: 81007345664.0000 -  
val_mean_absolute_error: 173729.9375  
Epoch 484/500  
219/219 - 1s - 3ms/step - loss: 79256510464.0000 -  
mean_absolute_error: 175717.8906 - val_loss: 80916168704.0000 -  
val_mean_absolute_error: 173613.9531  
Epoch 485/500  
219/219 - 1s - 2ms/step - loss: 79163367424.0000 -  
mean_absolute_error: 175572.4062 - val_loss: 80824672256.0000 -  
val_mean_absolute_error: 173496.7500  
Epoch 486/500  
219/219 - 1s - 3ms/step - loss: 79070986240.0000 -  
mean_absolute_error: 175440.9375 - val_loss: 80732168192.0000 -  
val_mean_absolute_error: 173377.5469  
Epoch 487/500  
219/219 - 0s - 2ms/step - loss: 78977523712.0000 -  
mean_absolute_error: 175363.2656 - val_loss: 80640491520.0000 -  
val_mean_absolute_error: 173263.4375  
Epoch 488/500  
219/219 - 0s - 2ms/step - loss: 78884626432.0000 -  
mean_absolute_error: 175220.5469 - val_loss: 80547618816.0000 -  
val_mean_absolute_error: 173159.5156  
Epoch 489/500  
219/219 - 0s - 2ms/step - loss: 78789926912.0000 -  
mean_absolute_error: 175063.0781 - val_loss: 80454107136.0000 -  
val_mean_absolute_error: 173007.6406  
Epoch 490/500  
219/219 - 1s - 3ms/step - loss: 78695841792.0000 -  
mean_absolute_error: 174985.4375 - val_loss: 80361603072.0000 -  
val_mean_absolute_error: 172912.9531  
Epoch 491/500  
219/219 - 1s - 3ms/step - loss: 78601658368.0000 -  
mean_absolute_error: 174819.8750 - val_loss: 80268812288.0000 -  
val_mean_absolute_error: 172774.8125  
Epoch 492/500  
219/219 - 0s - 2ms/step - loss: 78507933696.0000 -  
mean_absolute_error: 174689.8125 - val_loss: 80176013312.0000 -  
val_mean_absolute_error: 172650.8281  
Epoch 493/500  
219/219 - 1s - 3ms/step - loss: 78413946880.0000 -  
mean_absolute_error: 174614.7969 - val_loss: 80082509824.0000 -  
val_mean_absolute_error: 172535.9688  
Epoch 494/500  
219/219 - 0s - 2ms/step - loss: 78319108096.0000 -  
mean_absolute_error: 174432.5156 - val_loss: 79988539392.0000 -  
val_mean_absolute_error: 172397.0625  
Epoch 495/500  
219/219 - 1s - 3ms/step - loss: 78224293888.0000 -  
mean_absolute_error: 174304.4375 - val_loss: 79895658496.0000 -
```

```

val_mean_absolute_error: 172286.8438
Epoch 496/500
219/219 - 1s - 4ms/step - loss: 78130610176.0000 -
mean_absolute_error: 174226.0625 - val_loss: 79803367424.0000 -
val_mean_absolute_error: 172163.6875
Epoch 497/500
219/219 - 1s - 4ms/step - loss: 78036762624.0000 -
mean_absolute_error: 174090.5469 - val_loss: 79711420416.0000 -
val_mean_absolute_error: 172020.8438
Epoch 498/500
219/219 - 1s - 4ms/step - loss: 77944086528.0000 -
mean_absolute_error: 173980.6719 - val_loss: 79618916352.0000 -
val_mean_absolute_error: 171900.0938
Epoch 499/500
219/219 - 1s - 4ms/step - loss: 77851049984.0000 -
mean_absolute_error: 173757.0938 - val_loss: 79526969344.0000 -
val_mean_absolute_error: 171778.3438
Epoch 500/500
219/219 - 1s - 6ms/step - loss: 77758152704.0000 -
mean_absolute_error: 173671.6094 - val_loss: 79435374592.0000 -
val_mean_absolute_error: 171632.0156

# Choose the model to train
model_2 = advanced_mlp_model(arr_x_train.shape[1],
arr_y_train.shape[1])
model_2.summary()

print("\nTraining Advanced MLP Model:")
# Early Stopping Callback
early_stopping = tf.keras.callbacks.EarlyStopping(monitor='val_loss',
patience=20, restore_best_weights=True)

# Training the model
history_2 = model_2.fit(
    arr_x_train, arr_y_train,
    batch_size=64,
    epochs=500,
    validation_data=(arr_x_valid, arr_y_valid),
    verbose=2,
    callbacks=[early_stopping]
)

Model: "sequential_2"

```

Layer (type)	Output Shape
Param #	

dense_6 (Dense)	(None, 128)
2,816	
dropout_2 (Dropout)	(None, 128)
0	
dense_7 (Dense)	(None, 64)
8,256	
dropout_3 (Dropout)	(None, 64)
0	
dense_8 (Dense)	(None, 32)
2,080	
dense_9 (Dense)	(None, 1)
33	

Total params: 13,185 (51.50 KB)

Trainable params: 13,185 (51.50 KB)

Non-trainable params: 0 (0.00 B)

Training Advanced MLP Model:

Epoch 1/500

219/219 - 2s - 11ms/step - loss: 415944376320.0000 -

mean_absolute_error: 531449.2500 - val_loss: 384463142912.0000 -

val_mean_absolute_error: 501546.0312

Epoch 2/500

219/219 - 1s - 3ms/step - loss: 246366093312.0000 -

mean_absolute_error: 346407.7500 - val_loss: 113670283264.0000 -

val_mean_absolute_error: 191299.1562

Epoch 3/500

219/219 - 1s - 3ms/step - loss: 106482114560.0000 -

mean_absolute_error: 205481.8594 - val_loss: 102942588928.0000 -

val_mean_absolute_error: 199722.2031

Epoch 4/500

219/219 - 1s - 3ms/step - loss: 101363245056.0000 -

mean_absolute_error: 203644.2188 - val_loss: 98849275904.0000 -

val_mean_absolute_error: 198077.4375

Epoch 5/500

219/219 - 1s - 6ms/step - loss: 97303871488.0000 -
mean_absolute_error: 199962.3281 - val_loss: 94372184064.0000 -
val_mean_absolute_error: 190780.9844
Epoch 6/500
219/219 - 1s - 4ms/step - loss: 92676988928.0000 -
mean_absolute_error: 194606.2812 - val_loss: 89667633152.0000 -
val_mean_absolute_error: 186576.2969
Epoch 7/500
219/219 - 1s - 5ms/step - loss: 88760991744.0000 -
mean_absolute_error: 189208.5469 - val_loss: 84502044672.0000 -
val_mean_absolute_error: 178915.7500
Epoch 8/500
219/219 - 1s - 5ms/step - loss: 81904746496.0000 -
mean_absolute_error: 181484.7344 - val_loss: 78984708096.0000 -
val_mean_absolute_error: 173529.3281
Epoch 9/500
219/219 - 1s - 6ms/step - loss: 77644881920.0000 -
mean_absolute_error: 174611.9062 - val_loss: 73136488448.0000 -
val_mean_absolute_error: 165911.4844
Epoch 10/500
219/219 - 1s - 4ms/step - loss: 70606635008.0000 -
mean_absolute_error: 166860.6562 - val_loss: 67238027264.0000 -
val_mean_absolute_error: 155416.0781
Epoch 11/500
219/219 - 1s - 3ms/step - loss: 64936689664.0000 -
mean_absolute_error: 157351.2031 - val_loss: 62001360896.0000 -
val_mean_absolute_error: 146914.7969
Epoch 12/500
219/219 - 1s - 3ms/step - loss: 60978163712.0000 -
mean_absolute_error: 150435.4219 - val_loss: 57903239168.0000 -
val_mean_absolute_error: 141296.4062
Epoch 13/500
219/219 - 1s - 3ms/step - loss: 56997089280.0000 -
mean_absolute_error: 145290.7969 - val_loss: 54948515840.0000 -
val_mean_absolute_error: 138998.1250
Epoch 14/500
219/219 - 1s - 3ms/step - loss: 54418522112.0000 -
mean_absolute_error: 141910.3438 - val_loss: 52949135360.0000 -
val_mean_absolute_error: 137854.0312
Epoch 15/500
219/219 - 1s - 3ms/step - loss: 52857651200.0000 -
mean_absolute_error: 140563.6250 - val_loss: 51308068864.0000 -
val_mean_absolute_error: 134132.3438
Epoch 16/500
219/219 - 1s - 6ms/step - loss: 51592577024.0000 -
mean_absolute_error: 139216.0469 - val_loss: 50056663040.0000 -
val_mean_absolute_error: 132236.7969
Epoch 17/500
219/219 - 1s - 3ms/step - loss: 50637111296.0000 -

```
mean_absolute_error: 137172.0469 - val_loss: 49028108288.0000 -  
val_mean_absolute_error: 132303.6562  
Epoch 18/500  
219/219 - 1s - 3ms/step - loss: 48916066304.0000 -  
mean_absolute_error: 135322.5000 - val_loss: 48131735552.0000 -  
val_mean_absolute_error: 129398.0625  
Epoch 19/500  
219/219 - 1s - 3ms/step - loss: 48206999552.0000 -  
mean_absolute_error: 134661.2188 - val_loss: 47238152192.0000 -  
val_mean_absolute_error: 128793.1641  
Epoch 20/500  
219/219 - 1s - 3ms/step - loss: 47344152576.0000 -  
mean_absolute_error: 134313.1406 - val_loss: 46424018944.0000 -  
val_mean_absolute_error: 128247.8047  
Epoch 21/500  
219/219 - 1s - 6ms/step - loss: 46889865216.0000 -  
mean_absolute_error: 132695.7812 - val_loss: 45972766720.0000 -  
val_mean_absolute_error: 130196.7344  
Epoch 22/500  
219/219 - 1s - 6ms/step - loss: 45784461312.0000 -  
mean_absolute_error: 132482.5938 - val_loss: 45066764288.0000 -  
val_mean_absolute_error: 128044.6484  
Epoch 23/500  
219/219 - 2s - 7ms/step - loss: 45509935104.0000 -  
mean_absolute_error: 131788.3750 - val_loss: 44330139648.0000 -  
val_mean_absolute_error: 125911.4219  
Epoch 24/500  
219/219 - 1s - 6ms/step - loss: 44449591296.0000 -  
mean_absolute_error: 130483.7812 - val_loss: 43683352576.0000 -  
val_mean_absolute_error: 125751.6562  
Epoch 25/500  
219/219 - 1s - 4ms/step - loss: 44541227008.0000 -  
mean_absolute_error: 129992.4766 - val_loss: 43220426752.0000 -  
val_mean_absolute_error: 126257.8203  
Epoch 26/500  
219/219 - 1s - 5ms/step - loss: 44482703360.0000 -  
mean_absolute_error: 130777.0000 - val_loss: 42768052224.0000 -  
val_mean_absolute_error: 122835.4062  
Epoch 27/500  
219/219 - 1s - 3ms/step - loss: 43489075200.0000 -  
mean_absolute_error: 129075.2031 - val_loss: 41967517696.0000 -  
val_mean_absolute_error: 123652.0312  
Epoch 28/500  
219/219 - 1s - 6ms/step - loss: 43059253248.0000 -  
mean_absolute_error: 128746.1875 - val_loss: 41469583360.0000 -  
val_mean_absolute_error: 123534.3750  
Epoch 29/500  
219/219 - 1s - 6ms/step - loss: 42054340608.0000 -  
mean_absolute_error: 127600.2734 - val_loss: 40983371776.0000 -
```

```
val_mean_absolute_error: 122093.2266
Epoch 30/500
219/219 - 1s - 3ms/step - loss: 41481244672.0000 -
mean_absolute_error: 127369.3906 - val_loss: 40457199616.0000 -
val_mean_absolute_error: 121134.1328
Epoch 31/500
219/219 - 1s - 3ms/step - loss: 41577226240.0000 -
mean_absolute_error: 126433.2500 - val_loss: 40324657152.0000 -
val_mean_absolute_error: 123965.2266
Epoch 32/500
219/219 - 1s - 3ms/step - loss: 41011752960.0000 -
mean_absolute_error: 126201.3359 - val_loss: 39405420544.0000 -
val_mean_absolute_error: 120673.2031
Epoch 33/500
219/219 - 1s - 3ms/step - loss: 40662011904.0000 -
mean_absolute_error: 125995.0000 - val_loss: 39088467968.0000 -
val_mean_absolute_error: 119113.4609
Epoch 34/500
219/219 - 1s - 3ms/step - loss: 40203427840.0000 -
mean_absolute_error: 124589.9375 - val_loss: 38522306560.0000 -
val_mean_absolute_error: 119537.2891
Epoch 35/500
219/219 - 1s - 3ms/step - loss: 40232112128.0000 -
mean_absolute_error: 125443.5000 - val_loss: 38307287040.0000 -
val_mean_absolute_error: 117969.9219
Epoch 36/500
219/219 - 1s - 3ms/step - loss: 39222091776.0000 -
mean_absolute_error: 124318.7500 - val_loss: 37791232000.0000 -
val_mean_absolute_error: 118282.5625
Epoch 37/500
219/219 - 2s - 7ms/step - loss: 39113920512.0000 -
mean_absolute_error: 124485.3594 - val_loss: 37401776128.0000 -
val_mean_absolute_error: 118182.2109
Epoch 38/500
219/219 - 1s - 5ms/step - loss: 38792511488.0000 -
mean_absolute_error: 123596.7734 - val_loss: 37117034496.0000 -
val_mean_absolute_error: 118127.7109
Epoch 39/500
219/219 - 1s - 6ms/step - loss: 39148961792.0000 -
mean_absolute_error: 123892.3828 - val_loss: 36774416384.0000 -
val_mean_absolute_error: 117512.4688
Epoch 40/500
219/219 - 1s - 6ms/step - loss: 38409805824.0000 -
mean_absolute_error: 123391.9141 - val_loss: 36511809536.0000 -
val_mean_absolute_error: 117356.0391
Epoch 41/500
219/219 - 1s - 3ms/step - loss: 38140960768.0000 -
mean_absolute_error: 123159.6172 - val_loss: 36229558272.0000 -
val_mean_absolute_error: 116969.0859
```

Epoch 42/500
219/219 - 1s - 6ms/step - loss: 38393921536.0000 -
mean_absolute_error: 123371.9766 - val_loss: 36171042816.0000 -
val_mean_absolute_error: 115989.8047
Epoch 43/500
219/219 - 1s - 6ms/step - loss: 38348328960.0000 -
mean_absolute_error: 122722.9375 - val_loss: 35769548800.0000 -
val_mean_absolute_error: 116643.3047
Epoch 44/500
219/219 - 1s - 6ms/step - loss: 37668106240.0000 -
mean_absolute_error: 122037.9688 - val_loss: 35630383104.0000 -
val_mean_absolute_error: 115190.1562
Epoch 45/500
219/219 - 1s - 3ms/step - loss: 37674156032.0000 -
mean_absolute_error: 122030.3906 - val_loss: 35290779648.0000 -
val_mean_absolute_error: 115293.3672
Epoch 46/500
219/219 - 1s - 3ms/step - loss: 37624311808.0000 -
mean_absolute_error: 122351.5078 - val_loss: 35056861184.0000 -
val_mean_absolute_error: 115340.8125
Epoch 47/500
219/219 - 1s - 3ms/step - loss: 37133815808.0000 -
mean_absolute_error: 121932.4688 - val_loss: 34852478976.0000 -
val_mean_absolute_error: 114910.2500
Epoch 48/500
219/219 - 1s - 3ms/step - loss: 37704884224.0000 -
mean_absolute_error: 121725.8359 - val_loss: 34726830080.0000 -
val_mean_absolute_error: 114144.5625
Epoch 49/500
219/219 - 1s - 6ms/step - loss: 37134270464.0000 -
mean_absolute_error: 121182.7109 - val_loss: 34475032576.0000 -
val_mean_absolute_error: 115110.2109
Epoch 50/500
219/219 - 1s - 3ms/step - loss: 37139902464.0000 -
mean_absolute_error: 120999.3516 - val_loss: 34270248960.0000 -
val_mean_absolute_error: 114083.6172
Epoch 51/500
219/219 - 1s - 3ms/step - loss: 35966091264.0000 -
mean_absolute_error: 119829.0938 - val_loss: 34128586752.0000 -
val_mean_absolute_error: 113601.2891
Epoch 52/500
219/219 - 1s - 3ms/step - loss: 36150734848.0000 -
mean_absolute_error: 120124.8203 - val_loss: 33917935616.0000 -
val_mean_absolute_error: 114118.2969
Epoch 53/500
219/219 - 1s - 4ms/step - loss: 37087424512.0000 -
mean_absolute_error: 119987.6641 - val_loss: 33750196224.0000 -
val_mean_absolute_error: 113742.4141
Epoch 54/500

219/219 - 1s - 5ms/step - loss: 36387213312.0000 -
mean_absolute_error: 120625.3828 - val_loss: 33597800448.0000 -
val_mean_absolute_error: 113084.7969
Epoch 55/500
219/219 - 1s - 6ms/step - loss: 36115804160.0000 -
mean_absolute_error: 119873.0547 - val_loss: 33453039616.0000 -
val_mean_absolute_error: 112920.9297
Epoch 56/500
219/219 - 1s - 4ms/step - loss: 35980341248.0000 -
mean_absolute_error: 120050.6250 - val_loss: 33307320320.0000 -
val_mean_absolute_error: 112697.0781
Epoch 57/500
219/219 - 1s - 5ms/step - loss: 35969847296.0000 -
mean_absolute_error: 120194.7031 - val_loss: 33430669312.0000 -
val_mean_absolute_error: 112035.0859
Epoch 58/500
219/219 - 1s - 6ms/step - loss: 36325580800.0000 -
mean_absolute_error: 119691.4688 - val_loss: 33012254720.0000 -
val_mean_absolute_error: 112347.5547
Epoch 59/500
219/219 - 1s - 3ms/step - loss: 35631067136.0000 -
mean_absolute_error: 118995.4531 - val_loss: 32869185536.0000 -
val_mean_absolute_error: 112207.0703
Epoch 60/500
219/219 - 1s - 3ms/step - loss: 35349082112.0000 -
mean_absolute_error: 119421.7891 - val_loss: 32714102784.0000 -
val_mean_absolute_error: 112126.3906
Epoch 61/500
219/219 - 1s - 6ms/step - loss: 35377074176.0000 -
mean_absolute_error: 118287.2656 - val_loss: 32612696064.0000 -
val_mean_absolute_error: 111818.3125
Epoch 62/500
219/219 - 1s - 6ms/step - loss: 35372396544.0000 -
mean_absolute_error: 117711.6094 - val_loss: 32537559040.0000 -
val_mean_absolute_error: 111377.2812
Epoch 63/500
219/219 - 1s - 3ms/step - loss: 34978775040.0000 -
mean_absolute_error: 118673.5547 - val_loss: 32368134144.0000 -
val_mean_absolute_error: 111677.5469
Epoch 64/500
219/219 - 1s - 3ms/step - loss: 35450781696.0000 -
mean_absolute_error: 118657.1406 - val_loss: 32413689856.0000 -
val_mean_absolute_error: 110910.8125
Epoch 65/500
219/219 - 1s - 6ms/step - loss: 35274850304.0000 -
mean_absolute_error: 118505.0312 - val_loss: 32134719488.0000 -
val_mean_absolute_error: 111488.9062
Epoch 66/500
219/219 - 2s - 7ms/step - loss: 34606657536.0000 -


```
mean_absolute_error: 118114.9531 - val_loss: 32024342528.0000 -  
val_mean_absolute_error: 111182.0469  
Epoch 67/500  
219/219 - 1s - 6ms/step - loss: 34537988096.0000 -  
mean_absolute_error: 117990.6250 - val_loss: 31949174784.0000 -  
val_mean_absolute_error: 111687.0000  
Epoch 68/500  
219/219 - 1s - 5ms/step - loss: 33873405952.0000 -  
mean_absolute_error: 117327.1797 - val_loss: 31802703872.0000 -  
val_mean_absolute_error: 110939.9062  
Epoch 69/500  
219/219 - 1s - 5ms/step - loss: 34400059392.0000 -  
mean_absolute_error: 117988.0938 - val_loss: 31986769920.0000 -  
val_mean_absolute_error: 110363.7578  
Epoch 70/500  
219/219 - 1s - 3ms/step - loss: 34220867584.0000 -  
mean_absolute_error: 117521.6562 - val_loss: 31628222464.0000 -  
val_mean_absolute_error: 110319.5703  
Epoch 71/500  
219/219 - 1s - 6ms/step - loss: 35134865408.0000 -  
mean_absolute_error: 117448.9531 - val_loss: 31765843968.0000 -  
val_mean_absolute_error: 112242.8906  
Epoch 72/500  
219/219 - 1s - 3ms/step - loss: 34331168768.0000 -  
mean_absolute_error: 117688.6953 - val_loss: 31661340672.0000 -  
val_mean_absolute_error: 109784.6719  
Epoch 73/500  
219/219 - 1s - 3ms/step - loss: 34018504704.0000 -  
mean_absolute_error: 117380.0078 - val_loss: 31325886464.0000 -  
val_mean_absolute_error: 110249.7734  
Epoch 74/500  
219/219 - 1s - 6ms/step - loss: 33800751104.0000 -  
mean_absolute_error: 116041.1797 - val_loss: 31255355392.0000 -  
val_mean_absolute_error: 110147.6875  
Epoch 75/500  
219/219 - 1s - 3ms/step - loss: 34642341888.0000 -  
mean_absolute_error: 116631.7969 - val_loss: 31142053888.0000 -  
val_mean_absolute_error: 109982.9531  
Epoch 76/500  
219/219 - 1s - 3ms/step - loss: 33837578240.0000 -  
mean_absolute_error: 116733.8516 - val_loss: 31202344960.0000 -  
val_mean_absolute_error: 109227.0312  
Epoch 77/500  
219/219 - 1s - 3ms/step - loss: 33572818944.0000 -  
mean_absolute_error: 116452.0859 - val_loss: 31098583040.0000 -  
val_mean_absolute_error: 109120.1172  
Epoch 78/500  
219/219 - 1s - 3ms/step - loss: 34109745152.0000 -  
mean_absolute_error: 116722.2188 - val_loss: 31355527168.0000 -
```

```
val_mean_absolute_error: 108884.9375
Epoch 79/500
219/219 - 1s - 6ms/step - loss: 33816074240.0000 -
mean_absolute_error: 116144.0938 - val_loss: 31188629504.0000 -
val_mean_absolute_error: 108916.4141
Epoch 80/500
219/219 - 1s - 3ms/step - loss: 34522238976.0000 -
mean_absolute_error: 116826.7969 - val_loss: 30782105600.0000 -
val_mean_absolute_error: 109156.4375
Epoch 81/500
219/219 - 1s - 3ms/step - loss: 32922761216.0000 -
mean_absolute_error: 115794.1953 - val_loss: 30768521216.0000 -
val_mean_absolute_error: 108794.8828
Epoch 82/500
219/219 - 1s - 5ms/step - loss: 34320670720.0000 -
mean_absolute_error: 116002.6172 - val_loss: 30700691456.0000 -
val_mean_absolute_error: 108498.6172
Epoch 83/500
219/219 - 1s - 6ms/step - loss: 33406642176.0000 -
mean_absolute_error: 115902.0078 - val_loss: 30640406528.0000 -
val_mean_absolute_error: 108414.6484
Epoch 84/500
219/219 - 1s - 5ms/step - loss: 33564057600.0000 -
mean_absolute_error: 116081.9766 - val_loss: 30539722752.0000 -
val_mean_absolute_error: 108500.0625
Epoch 85/500
219/219 - 1s - 4ms/step - loss: 33210937344.0000 -
mean_absolute_error: 115169.2188 - val_loss: 30430074880.0000 -
val_mean_absolute_error: 109108.2266
Epoch 86/500
219/219 - 1s - 3ms/step - loss: 32772780032.0000 -
mean_absolute_error: 114945.3516 - val_loss: 30382743552.0000 -
val_mean_absolute_error: 109232.1562
Epoch 87/500
219/219 - 1s - 3ms/step - loss: 32160366592.0000 -
mean_absolute_error: 114383.5078 - val_loss: 30379022336.0000 -
val_mean_absolute_error: 108196.1094
Epoch 88/500
219/219 - 1s - 3ms/step - loss: 32660971520.0000 -
mean_absolute_error: 115424.4375 - val_loss: 30256984064.0000 -
val_mean_absolute_error: 108164.2344
Epoch 89/500
219/219 - 1s - 3ms/step - loss: 33688928256.0000 -
mean_absolute_error: 116074.2891 - val_loss: 30413520896.0000 -
val_mean_absolute_error: 107711.5547
Epoch 90/500
219/219 - 1s - 6ms/step - loss: 32801110016.0000 -
mean_absolute_error: 114807.3359 - val_loss: 30534547456.0000 -
val_mean_absolute_error: 107594.0391
```

Epoch 91/500
219/219 - 1s - 3ms/step - loss: 32399607808.0000 -
mean_absolute_error: 114957.4688 - val_loss: 30047741952.0000 -
val_mean_absolute_error: 108192.7656
Epoch 92/500
219/219 - 1s - 3ms/step - loss: 32642660352.0000 -
mean_absolute_error: 114869.6484 - val_loss: 29995878400.0000 -
val_mean_absolute_error: 108438.1562
Epoch 93/500
219/219 - 1s - 3ms/step - loss: 32407046144.0000 -
mean_absolute_error: 114823.8359 - val_loss: 29932951552.0000 -
val_mean_absolute_error: 107723.6484
Epoch 94/500
219/219 - 1s - 6ms/step - loss: 33056368640.0000 -
mean_absolute_error: 115028.8750 - val_loss: 29878593536.0000 -
val_mean_absolute_error: 107741.2188
Epoch 95/500
219/219 - 1s - 6ms/step - loss: 32769486848.0000 -
mean_absolute_error: 114464.1484 - val_loss: 29966503936.0000 -
val_mean_absolute_error: 107249.6328
Epoch 96/500
219/219 - 1s - 3ms/step - loss: 33212952576.0000 -
mean_absolute_error: 115038.6016 - val_loss: 29777553408.0000 -
val_mean_absolute_error: 107409.2500
Epoch 97/500
219/219 - 1s - 3ms/step - loss: 33506797568.0000 -
mean_absolute_error: 115093.8516 - val_loss: 29768988672.0000 -
val_mean_absolute_error: 107148.0781
Epoch 98/500
219/219 - 1s - 4ms/step - loss: 32007178240.0000 -
mean_absolute_error: 113366.7812 - val_loss: 29648930816.0000 -
val_mean_absolute_error: 107326.2422
Epoch 99/500
219/219 - 1s - 4ms/step - loss: 32738908160.0000 -
mean_absolute_error: 114055.9141 - val_loss: 29703450624.0000 -
val_mean_absolute_error: 106901.3125
Epoch 100/500
219/219 - 1s - 6ms/step - loss: 33052286976.0000 -
mean_absolute_error: 114032.7578 - val_loss: 29632972800.0000 -
val_mean_absolute_error: 106901.5859
Epoch 101/500
219/219 - 1s - 5ms/step - loss: 32602611712.0000 -
mean_absolute_error: 113987.5469 - val_loss: 29796657152.0000 -
val_mean_absolute_error: 106668.8672
Epoch 102/500
219/219 - 1s - 3ms/step - loss: 32320817152.0000 -
mean_absolute_error: 113665.3281 - val_loss: 29507586048.0000 -
val_mean_absolute_error: 107560.7578
Epoch 103/500

219/219 - 1s - 5ms/step - loss: 32175896576.0000 -
mean_absolute_error: 113547.7266 - val_loss: 29514569728.0000 -
val_mean_absolute_error: 107801.0156
Epoch 104/500
219/219 - 1s - 3ms/step - loss: 31912329216.0000 -
mean_absolute_error: 113417.0859 - val_loss: 29430327296.0000 -
val_mean_absolute_error: 106700.0938
Epoch 105/500
219/219 - 1s - 3ms/step - loss: 32954101760.0000 -
mean_absolute_error: 114125.8750 - val_loss: 29384503296.0000 -
val_mean_absolute_error: 106697.6953
Epoch 106/500
219/219 - 1s - 3ms/step - loss: 32121460736.0000 -
mean_absolute_error: 113497.0312 - val_loss: 29330976768.0000 -
val_mean_absolute_error: 106534.0938
Epoch 107/500
219/219 - 1s - 3ms/step - loss: 31876321280.0000 -
mean_absolute_error: 113084.4688 - val_loss: 29282076672.0000 -
val_mean_absolute_error: 106785.8672
Epoch 108/500
219/219 - 1s - 3ms/step - loss: 31634343936.0000 -
mean_absolute_error: 112919.7500 - val_loss: 29266784256.0000 -
val_mean_absolute_error: 106817.4297
Epoch 109/500
219/219 - 1s - 3ms/step - loss: 31651307520.0000 -
mean_absolute_error: 113036.9609 - val_loss: 29223507968.0000 -
val_mean_absolute_error: 106478.3047
Epoch 110/500
219/219 - 1s - 3ms/step - loss: 31590701056.0000 -
mean_absolute_error: 112978.3672 - val_loss: 29175502848.0000 -
val_mean_absolute_error: 106191.4375
Epoch 111/500
219/219 - 1s - 6ms/step - loss: 32021010432.0000 -
mean_absolute_error: 113344.4219 - val_loss: 29345304576.0000 -
val_mean_absolute_error: 105856.3281
Epoch 112/500
219/219 - 1s - 3ms/step - loss: 30964162560.0000 -
mean_absolute_error: 112627.6953 - val_loss: 29082806272.0000 -
val_mean_absolute_error: 106116.4375
Epoch 113/500
219/219 - 1s - 6ms/step - loss: 31534974976.0000 -
mean_absolute_error: 112775.2031 - val_loss: 29038016512.0000 -
val_mean_absolute_error: 106039.1172
Epoch 114/500
219/219 - 1s - 3ms/step - loss: 31819552768.0000 -
mean_absolute_error: 113022.6484 - val_loss: 28963495936.0000 -
val_mean_absolute_error: 106138.3750
Epoch 115/500
219/219 - 1s - 5ms/step - loss: 31154647040.0000 -

```
mean_absolute_error: 112829.3828 - val_loss: 28991229952.0000 -  
val_mean_absolute_error: 105739.8750  
Epoch 116/500  
219/219 - 1s - 4ms/step - loss: 31911487488.0000 -  
mean_absolute_error: 112942.4922 - val_loss: 29051754496.0000 -  
val_mean_absolute_error: 105521.4297  
Epoch 117/500  
219/219 - 1s - 5ms/step - loss: 31853514752.0000 -  
mean_absolute_error: 113056.3906 - val_loss: 28889935872.0000 -  
val_mean_absolute_error: 105818.8906  
Epoch 118/500  
219/219 - 1s - 5ms/step - loss: 31961395200.0000 -  
mean_absolute_error: 112752.4766 - val_loss: 28880433152.0000 -  
val_mean_absolute_error: 105612.3203  
Epoch 119/500  
219/219 - 1s - 3ms/step - loss: 32013465600.0000 -  
mean_absolute_error: 112604.6875 - val_loss: 28923224064.0000 -  
val_mean_absolute_error: 105537.8359  
Epoch 120/500  
219/219 - 1s - 3ms/step - loss: 31253815296.0000 -  
mean_absolute_error: 112778.9219 - val_loss: 28948459520.0000 -  
val_mean_absolute_error: 105483.3203  
Epoch 121/500  
219/219 - 1s - 3ms/step - loss: 32113510400.0000 -  
mean_absolute_error: 113157.5781 - val_loss: 28740487168.0000 -  
val_mean_absolute_error: 105850.2969  
Epoch 122/500  
219/219 - 1s - 5ms/step - loss: 31698137088.0000 -  
mean_absolute_error: 112398.1562 - val_loss: 28757909504.0000 -  
val_mean_absolute_error: 105366.7344  
Epoch 123/500  
219/219 - 1s - 3ms/step - loss: 31897806848.0000 -  
mean_absolute_error: 112538.4297 - val_loss: 28666687488.0000 -  
val_mean_absolute_error: 105494.3672  
Epoch 124/500  
219/219 - 1s - 3ms/step - loss: 32236576768.0000 -  
mean_absolute_error: 112565.4375 - val_loss: 28660582400.0000 -  
val_mean_absolute_error: 105408.0234  
Epoch 125/500  
219/219 - 1s - 3ms/step - loss: 31211673600.0000 -  
mean_absolute_error: 111992.7578 - val_loss: 28708059136.0000 -  
val_mean_absolute_error: 105099.3516  
Epoch 126/500  
219/219 - 1s - 6ms/step - loss: 31355207680.0000 -  
mean_absolute_error: 112100.0234 - val_loss: 28653125632.0000 -  
val_mean_absolute_error: 105024.2734  
Epoch 127/500  
219/219 - 1s - 6ms/step - loss: 31339751424.0000 -  
mean_absolute_error: 111808.6953 - val_loss: 28645976064.0000 -  
val_mean_absolute_error: 105001.2266
```

Epoch 128/500
219/219 - 1s - 3ms/step - loss: 31858823168.0000 -
mean_absolute_error: 111700.5312 - val_loss: 28655247360.0000 -
val_mean_absolute_error: 104883.5859
Epoch 129/500
219/219 - 2s - 8ms/step - loss: 31814926336.0000 -
mean_absolute_error: 112241.6797 - val_loss: 28638599168.0000 -
val_mean_absolute_error: 104849.1016
Epoch 130/500
219/219 - 1s - 7ms/step - loss: 31411826688.0000 -
mean_absolute_error: 111916.4531 - val_loss: 28513368064.0000 -
val_mean_absolute_error: 104980.4062
Epoch 131/500
219/219 - 1s - 5ms/step - loss: 31409856512.0000 -
mean_absolute_error: 112558.4766 - val_loss: 28442378240.0000 -
val_mean_absolute_error: 104992.6641
Epoch 132/500
219/219 - 1s - 6ms/step - loss: 31293177856.0000 -
mean_absolute_error: 112189.3594 - val_loss: 28396859392.0000 -
val_mean_absolute_error: 104880.8203
Epoch 133/500
219/219 - 1s - 5ms/step - loss: 31268765696.0000 -
mean_absolute_error: 111860.5547 - val_loss: 28479449088.0000 -
val_mean_absolute_error: 106191.5000
Epoch 134/500
219/219 - 1s - 5ms/step - loss: 31571494912.0000 -
mean_absolute_error: 111882.0547 - val_loss: 28341248000.0000 -
val_mean_absolute_error: 104962.0156
Epoch 135/500
219/219 - 1s - 5ms/step - loss: 31238580224.0000 -
mean_absolute_error: 111465.6094 - val_loss: 28341047296.0000 -
val_mean_absolute_error: 105347.1797
Epoch 136/500
219/219 - 1s - 3ms/step - loss: 30405582848.0000 -
mean_absolute_error: 111318.6094 - val_loss: 28535902208.0000 -
val_mean_absolute_error: 104632.4375
Epoch 137/500
219/219 - 1s - 3ms/step - loss: 31041253376.0000 -
mean_absolute_error: 111492.3828 - val_loss: 28239697920.0000 -
val_mean_absolute_error: 105278.1875
Epoch 138/500
219/219 - 1s - 3ms/step - loss: 30864752640.0000 -
mean_absolute_error: 111553.0625 - val_loss: 28234493952.0000 -
val_mean_absolute_error: 104585.8047
Epoch 139/500
219/219 - 1s - 3ms/step - loss: 31140521984.0000 -
mean_absolute_error: 111030.4062 - val_loss: 28238577664.0000 -
val_mean_absolute_error: 104396.5859
Epoch 140/500

219/219 - 1s - 6ms/step - loss: 30882283520.0000 -
mean_absolute_error: 111078.5547 - val_loss: 28418048000.0000 -
val_mean_absolute_error: 104435.9375
Epoch 141/500
219/219 - 1s - 3ms/step - loss: 31268800512.0000 -
mean_absolute_error: 112131.6016 - val_loss: 28251854848.0000 -
val_mean_absolute_error: 104298.1328
Epoch 142/500
219/219 - 1s - 3ms/step - loss: 31079172096.0000 -
mean_absolute_error: 111054.5078 - val_loss: 28128159744.0000 -
val_mean_absolute_error: 105098.3750
Epoch 143/500
219/219 - 1s - 3ms/step - loss: 31569334272.0000 -
mean_absolute_error: 111637.7578 - val_loss: 28082802688.0000 -
val_mean_absolute_error: 104493.5859
Epoch 144/500
219/219 - 1s - 6ms/step - loss: 30603673600.0000 -
mean_absolute_error: 111431.1406 - val_loss: 28107732992.0000 -
val_mean_absolute_error: 104279.8438
Epoch 145/500
219/219 - 1s - 3ms/step - loss: 31032391680.0000 -
mean_absolute_error: 111452.1797 - val_loss: 28011806720.0000 -
val_mean_absolute_error: 104400.6172
Epoch 146/500
219/219 - 1s - 3ms/step - loss: 30766981120.0000 -
mean_absolute_error: 110680.9844 - val_loss: 28024815616.0000 -
val_mean_absolute_error: 104171.0469
Epoch 147/500
219/219 - 1s - 4ms/step - loss: 30516082688.0000 -
mean_absolute_error: 110988.6641 - val_loss: 27977936896.0000 -
val_mean_absolute_error: 104426.5078
Epoch 148/500
219/219 - 2s - 7ms/step - loss: 30293612544.0000 -
mean_absolute_error: 111664.5781 - val_loss: 27991818240.0000 -
val_mean_absolute_error: 104071.1328
Epoch 149/500
219/219 - 1s - 5ms/step - loss: 30877483008.0000 -
mean_absolute_error: 111256.7422 - val_loss: 28153655296.0000 -
val_mean_absolute_error: 103960.7969
Epoch 150/500
219/219 - 1s - 5ms/step - loss: 30392125440.0000 -
mean_absolute_error: 110220.5156 - val_loss: 28066320384.0000 -
val_mean_absolute_error: 103910.5391
Epoch 151/500
219/219 - 1s - 3ms/step - loss: 30442692608.0000 -
mean_absolute_error: 110849.4609 - val_loss: 27906906112.0000 -
val_mean_absolute_error: 103826.4531
Epoch 152/500
219/219 - 1s - 6ms/step - loss: 30596931584.0000 -

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mean_absolute_error: 111190.2734 - val_loss: 27843098624.0000 -  
val_mean_absolute_error: 104504.2344  
Epoch 153/500  
219/219 - 1s - 3ms/step - loss: 30992742400.0000 -  
mean_absolute_error: 111195.1641 - val_loss: 27838558208.0000 -  
val_mean_absolute_error: 104481.9844  
Epoch 154/500  
219/219 - 1s - 3ms/step - loss: 30564175872.0000 -  
mean_absolute_error: 110899.7109 - val_loss: 27779194880.0000 -  
val_mean_absolute_error: 104122.5938  
Epoch 155/500  
219/219 - 1s - 3ms/step - loss: 30804940800.0000 -  
mean_absolute_error: 110751.0469 - val_loss: 27898826752.0000 -  
val_mean_absolute_error: 103669.7500  
Epoch 156/500  
219/219 - 1s - 3ms/step - loss: 30797643776.0000 -  
mean_absolute_error: 110892.9297 - val_loss: 27751925760.0000 -  
val_mean_absolute_error: 104066.0469  
Epoch 157/500  
219/219 - 1s - 6ms/step - loss: 30746494976.0000 -  
mean_absolute_error: 110841.5000 - val_loss: 27717842944.0000 -  
val_mean_absolute_error: 104206.5469  
Epoch 158/500  
219/219 - 1s - 6ms/step - loss: 30779588608.0000 -  
mean_absolute_error: 110503.7656 - val_loss: 27725533184.0000 -  
val_mean_absolute_error: 103574.0625  
Epoch 159/500  
219/219 - 1s - 3ms/step - loss: 29904640000.0000 -  
mean_absolute_error: 109967.2344 - val_loss: 27777083392.0000 -  
val_mean_absolute_error: 104824.4141  
Epoch 160/500  
219/219 - 1s - 3ms/step - loss: 30784505856.0000 -  
mean_absolute_error: 111200.0703 - val_loss: 27651622912.0000 -  
val_mean_absolute_error: 103946.4453  
Epoch 161/500  
219/219 - 1s - 3ms/step - loss: 29758932992.0000 -  
mean_absolute_error: 109885.4453 - val_loss: 27716005888.0000 -  
val_mean_absolute_error: 103510.5391  
Epoch 162/500  
219/219 - 1s - 3ms/step - loss: 29845553152.0000 -  
mean_absolute_error: 109941.4141 - val_loss: 27692150784.0000 -  
val_mean_absolute_error: 103436.4766  
Epoch 163/500  
219/219 - 1s - 3ms/step - loss: 29965144064.0000 -  
mean_absolute_error: 110597.4844 - val_loss: 27628191744.0000 -  
val_mean_absolute_error: 103495.2188  
Epoch 164/500  
219/219 - 1s - 5ms/step - loss: 30339102720.0000 -  
mean_absolute_error: 110286.4609 - val_loss: 27979671552.0000 -
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val_mean_absolute_error: 103746.4141
Epoch 165/500
219/219 - 1s - 6ms/step - loss: 30370820096.0000 -
mean_absolute_error: 110885.6875 - val_loss: 27580289024.0000 -
val_mean_absolute_error: 104023.0391
Epoch 166/500
219/219 - 1s - 5ms/step - loss: 30439469056.0000 -
mean_absolute_error: 111033.9766 - val_loss: 27556177920.0000 -
val_mean_absolute_error: 103322.4844
Epoch 167/500
219/219 - 1s - 4ms/step - loss: 29672787968.0000 -
mean_absolute_error: 109750.5859 - val_loss: 27547627520.0000 -
val_mean_absolute_error: 103337.5859
Epoch 168/500
219/219 - 1s - 5ms/step - loss: 29436481536.0000 -
mean_absolute_error: 109583.1328 - val_loss: 27513671680.0000 -
val_mean_absolute_error: 103697.6953
Epoch 169/500
219/219 - 1s - 6ms/step - loss: 30527033344.0000 -
mean_absolute_error: 110381.6875 - val_loss: 27518302208.0000 -
val_mean_absolute_error: 103956.8125
Epoch 170/500
219/219 - 1s - 6ms/step - loss: 30076006400.0000 -
mean_absolute_error: 110590.2266 - val_loss: 27468740608.0000 -
val_mean_absolute_error: 103431.3906
Epoch 171/500
219/219 - 1s - 3ms/step - loss: 29606270976.0000 -
mean_absolute_error: 110224.9609 - val_loss: 27461582848.0000 -
val_mean_absolute_error: 103259.0938
Epoch 172/500
219/219 - 1s - 3ms/step - loss: 30022051840.0000 -
mean_absolute_error: 109737.2422 - val_loss: 27446980608.0000 -
val_mean_absolute_error: 103830.8516
Epoch 173/500
219/219 - 1s - 3ms/step - loss: 29366671360.0000 -
mean_absolute_error: 109500.6797 - val_loss: 27468824576.0000 -
val_mean_absolute_error: 103040.8984
Epoch 174/500
219/219 - 1s - 3ms/step - loss: 29648041984.0000 -
mean_absolute_error: 109971.0000 - val_loss: 27416801280.0000 -
val_mean_absolute_error: 103314.4531
Epoch 175/500
219/219 - 1s - 3ms/step - loss: 29685004288.0000 -
mean_absolute_error: 109480.2578 - val_loss: 27368853504.0000 -
val_mean_absolute_error: 103639.7422
Epoch 176/500
219/219 - 1s - 3ms/step - loss: 29703329792.0000 -
mean_absolute_error: 110099.0000 - val_loss: 27354322944.0000 -
val_mean_absolute_error: 103278.0469
```

Epoch 177/500
219/219 - 1s - 3ms/step - loss: 29604831232.0000 -
mean_absolute_error: 109506.4531 - val_loss: 27394248704.0000 -
val_mean_absolute_error: 102888.4688
Epoch 178/500
219/219 - 1s - 3ms/step - loss: 29742342144.0000 -
mean_absolute_error: 110221.1484 - val_loss: 27256698880.0000 -
val_mean_absolute_error: 103146.6250
Epoch 179/500
219/219 - 1s - 3ms/step - loss: 29421942784.0000 -
mean_absolute_error: 108980.1406 - val_loss: 27302899712.0000 -
val_mean_absolute_error: 103486.7188
Epoch 180/500
219/219 - 1s - 4ms/step - loss: 29937422336.0000 -
mean_absolute_error: 109535.0547 - val_loss: 27322951680.0000 -
val_mean_absolute_error: 102795.4766
Epoch 181/500
219/219 - 1s - 6ms/step - loss: 30035941376.0000 -
mean_absolute_error: 109925.2500 - val_loss: 27250262016.0000 -
val_mean_absolute_error: 102775.4375
Epoch 182/500
219/219 - 1s - 6ms/step - loss: 29488531456.0000 -
mean_absolute_error: 109710.2500 - val_loss: 27382452224.0000 -
val_mean_absolute_error: 102678.4531
Epoch 183/500
219/219 - 1s - 4ms/step - loss: 30031777792.0000 -
mean_absolute_error: 109853.8906 - val_loss: 27294930944.0000 -
val_mean_absolute_error: 102566.1406
Epoch 184/500
219/219 - 1s - 5ms/step - loss: 29694853120.0000 -
mean_absolute_error: 109324.0469 - val_loss: 27182825472.0000 -
val_mean_absolute_error: 103405.0703
Epoch 185/500
219/219 - 1s - 6ms/step - loss: 29527592960.0000 -
mean_absolute_error: 109294.4609 - val_loss: 27212259328.0000 -
val_mean_absolute_error: 103009.2891
Epoch 186/500
219/219 - 1s - 6ms/step - loss: 29349685248.0000 -
mean_absolute_error: 108922.8828 - val_loss: 27121471488.0000 -
val_mean_absolute_error: 102777.7500
Epoch 187/500
219/219 - 1s - 6ms/step - loss: 29367263232.0000 -
mean_absolute_error: 109273.9141 - val_loss: 27105376256.0000 -
val_mean_absolute_error: 102604.2344
Epoch 188/500
219/219 - 1s - 3ms/step - loss: 29420222464.0000 -
mean_absolute_error: 109064.4688 - val_loss: 27366342656.0000 -
val_mean_absolute_error: 102676.6172
Epoch 189/500

219/219 - 1s - 3ms/step - loss: 29292154880.0000 -
mean_absolute_error: 109033.6797 - val_loss: 27061043200.0000 -
val_mean_absolute_error: 102630.0625
Epoch 190/500
219/219 - 1s - 3ms/step - loss: 29500942336.0000 -
mean_absolute_error: 109582.9453 - val_loss: 27187533824.0000 -
val_mean_absolute_error: 102516.3203
Epoch 191/500
219/219 - 1s - 6ms/step - loss: 29307275264.0000 -
mean_absolute_error: 109027.0156 - val_loss: 27087818752.0000 -
val_mean_absolute_error: 103176.8984
Epoch 192/500
219/219 - 1s - 6ms/step - loss: 29067108352.0000 -
mean_absolute_error: 109281.8203 - val_loss: 27048892416.0000 -
val_mean_absolute_error: 102812.5781
Epoch 193/500
219/219 - 2s - 7ms/step - loss: 28979732480.0000 -
mean_absolute_error: 108949.5234 - val_loss: 27241531392.0000 -
val_mean_absolute_error: 102506.2578
Epoch 194/500
219/219 - 1s - 5ms/step - loss: 29571715072.0000 -
mean_absolute_error: 109410.6719 - val_loss: 27044274176.0000 -
val_mean_absolute_error: 103166.3359
Epoch 195/500
219/219 - 1s - 6ms/step - loss: 29517217792.0000 -
mean_absolute_error: 109256.2266 - val_loss: 27089113088.0000 -
val_mean_absolute_error: 102287.2188
Epoch 196/500
219/219 - 1s - 4ms/step - loss: 29068728320.0000 -
mean_absolute_error: 109071.1875 - val_loss: 26981062656.0000 -
val_mean_absolute_error: 102381.3203
Epoch 197/500
219/219 - 1s - 5ms/step - loss: 29530937344.0000 -
mean_absolute_error: 109226.8438 - val_loss: 26919102464.0000 -
val_mean_absolute_error: 102426.2266
Epoch 198/500
219/219 - 1s - 6ms/step - loss: 28995661824.0000 -
mean_absolute_error: 108786.2031 - val_loss: 27045941248.0000 -
val_mean_absolute_error: 102201.0312
Epoch 199/500
219/219 - 1s - 3ms/step - loss: 29803132928.0000 -
mean_absolute_error: 109693.9375 - val_loss: 26918475776.0000 -
val_mean_absolute_error: 102838.2578
Epoch 200/500
219/219 - 1s - 3ms/step - loss: 29741355008.0000 -
mean_absolute_error: 109485.7500 - val_loss: 26903660544.0000 -
val_mean_absolute_error: 102161.6016
Epoch 201/500
219/219 - 1s - 3ms/step - loss: 29307672576.0000 -

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mean_absolute_error: 109405.3750 - val_loss: 26849093632.0000 -  
val_mean_absolute_error: 102471.8516  
Epoch 202/500  
219/219 - 1s - 6ms/step - loss: 29596272640.0000 -  
mean_absolute_error: 109332.6875 - val_loss: 26816495616.0000 -  
val_mean_absolute_error: 102509.4297  
Epoch 203/500  
219/219 - 1s - 3ms/step - loss: 28945637376.0000 -  
mean_absolute_error: 108369.1797 - val_loss: 26815905792.0000 -  
val_mean_absolute_error: 102131.6719  
Epoch 204/500  
219/219 - 1s - 3ms/step - loss: 29843978240.0000 -  
mean_absolute_error: 109065.8281 - val_loss: 26826440704.0000 -  
val_mean_absolute_error: 102367.6797  
Epoch 205/500  
219/219 - 1s - 3ms/step - loss: 28962879488.0000 -  
mean_absolute_error: 108830.0000 - val_loss: 26807658496.0000 -  
val_mean_absolute_error: 102139.2344  
Epoch 206/500  
219/219 - 1s - 3ms/step - loss: 28758065152.0000 -  
mean_absolute_error: 108551.0938 - val_loss: 26883260416.0000 -  
val_mean_absolute_error: 101978.4609  
Epoch 207/500  
219/219 - 1s - 3ms/step - loss: 29429231616.0000 -  
mean_absolute_error: 109083.6875 - val_loss: 26821775360.0000 -  
val_mean_absolute_error: 102029.8125  
Epoch 208/500  
219/219 - 2s - 7ms/step - loss: 28629821440.0000 -  
mean_absolute_error: 107896.6094 - val_loss: 27063740416.0000 -  
val_mean_absolute_error: 101893.6250  
Epoch 209/500  
219/219 - 1s - 5ms/step - loss: 29157761024.0000 -  
mean_absolute_error: 108602.0938 - val_loss: 26783193088.0000 -  
val_mean_absolute_error: 102120.9688  
Epoch 210/500  
219/219 - 1s - 6ms/step - loss: 28718796800.0000 -  
mean_absolute_error: 108378.4141 - val_loss: 26746333184.0000 -  
val_mean_absolute_error: 102594.3047  
Epoch 211/500  
219/219 - 1s - 5ms/step - loss: 28972853248.0000 -  
mean_absolute_error: 108715.1094 - val_loss: 26832156672.0000 -  
val_mean_absolute_error: 101803.6406  
Epoch 212/500  
219/219 - 1s - 5ms/step - loss: 29312667648.0000 -  
mean_absolute_error: 108929.1094 - val_loss: 26729326592.0000 -  
val_mean_absolute_error: 101874.7656  
Epoch 213/500  
219/219 - 1s - 3ms/step - loss: 29165836288.0000 -  
mean_absolute_error: 109089.9375 - val_loss: 26991312896.0000 -
```

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val_mean_absolute_error: 102036.7266
Epoch 214/500
219/219 - 1s - 6ms/step - loss: 29593257984.0000 -
mean_absolute_error: 109225.9844 - val_loss: 26665553920.0000 -
val_mean_absolute_error: 101821.1953
Epoch 215/500
219/219 - 1s - 3ms/step - loss: 28750819328.0000 -
mean_absolute_error: 108574.2812 - val_loss: 26661806080.0000 -
val_mean_absolute_error: 101965.7578
Epoch 216/500
219/219 - 1s - 3ms/step - loss: 29118533632.0000 -
mean_absolute_error: 108587.7500 - val_loss: 26741413888.0000 -
val_mean_absolute_error: 101768.0938
Epoch 217/500
219/219 - 1s - 3ms/step - loss: 28805423104.0000 -
mean_absolute_error: 107938.7422 - val_loss: 26700152832.0000 -
val_mean_absolute_error: 101682.8906
Epoch 218/500
219/219 - 1s - 3ms/step - loss: 28936980480.0000 -
mean_absolute_error: 109094.2109 - val_loss: 26784929792.0000 -
val_mean_absolute_error: 101729.4062
Epoch 219/500
219/219 - 1s - 3ms/step - loss: 28792244224.0000 -
mean_absolute_error: 107899.8984 - val_loss: 26625665024.0000 -
val_mean_absolute_error: 102648.7266
Epoch 220/500
219/219 - 1s - 3ms/step - loss: 28931307520.0000 -
mean_absolute_error: 108421.1406 - val_loss: 26598416384.0000 -
val_mean_absolute_error: 101756.3203
Epoch 221/500
219/219 - 1s - 3ms/step - loss: 28633231360.0000 -
mean_absolute_error: 108280.6562 - val_loss: 26550839296.0000 -
val_mean_absolute_error: 101862.3359
Epoch 222/500
219/219 - 1s - 3ms/step - loss: 29141352448.0000 -
mean_absolute_error: 108559.2031 - val_loss: 26576158720.0000 -
val_mean_absolute_error: 101696.8672
Epoch 223/500
219/219 - 1s - 3ms/step - loss: 29181949952.0000 -
mean_absolute_error: 108676.3281 - val_loss: 26576289792.0000 -
val_mean_absolute_error: 101930.1094
Epoch 224/500
219/219 - 1s - 3ms/step - loss: 28165478400.0000 -
mean_absolute_error: 107789.7344 - val_loss: 26567473152.0000 -
val_mean_absolute_error: 101657.7031
Epoch 225/500
219/219 - 2s - 7ms/step - loss: 28890775552.0000 -
mean_absolute_error: 108160.5156 - val_loss: 26596777984.0000 -
val_mean_absolute_error: 103004.7109
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Epoch 226/500
219/219 - 1s - 4ms/step - loss: 28903686144.0000 -
mean_absolute_error: 108452.8516 - val_loss: 26561708032.0000 -
val_mean_absolute_error: 102434.1016
Epoch 227/500
219/219 - 1s - 6ms/step - loss: 28972333056.0000 -
mean_absolute_error: 108681.9766 - val_loss: 26549051392.0000 -
val_mean_absolute_error: 101517.9062
Epoch 228/500
219/219 - 1s - 4ms/step - loss: 28574156800.0000 -
mean_absolute_error: 108139.0234 - val_loss: 26503675904.0000 -
val_mean_absolute_error: 101553.1328
Epoch 229/500
219/219 - 1s - 6ms/step - loss: 28890748928.0000 -
mean_absolute_error: 108623.0703 - val_loss: 26449205248.0000 -
val_mean_absolute_error: 101943.5625
Epoch 230/500
219/219 - 1s - 3ms/step - loss: 29412659200.0000 -
mean_absolute_error: 108522.4844 - val_loss: 26476910592.0000 -
val_mean_absolute_error: 101501.2031
Epoch 231/500
219/219 - 1s - 6ms/step - loss: 28777164800.0000 -
mean_absolute_error: 108053.1016 - val_loss: 26421917696.0000 -
val_mean_absolute_error: 101871.6016
Epoch 232/500
219/219 - 1s - 3ms/step - loss: 28695738368.0000 -
mean_absolute_error: 108197.7031 - val_loss: 26485444608.0000 -
val_mean_absolute_error: 101361.8203
Epoch 233/500
219/219 - 1s - 3ms/step - loss: 28206295040.0000 -
mean_absolute_error: 107118.9219 - val_loss: 26360449024.0000 -
val_mean_absolute_error: 101856.5938
Epoch 234/500
219/219 - 1s - 3ms/step - loss: 28192370688.0000 -
mean_absolute_error: 107831.8281 - val_loss: 26403512320.0000 -
val_mean_absolute_error: 101818.1641
Epoch 235/500
219/219 - 1s - 3ms/step - loss: 28446318592.0000 -
mean_absolute_error: 108020.0078 - val_loss: 26388938752.0000 -
val_mean_absolute_error: 101511.3203
Epoch 236/500
219/219 - 1s - 3ms/step - loss: 28615114752.0000 -
mean_absolute_error: 107380.0078 - val_loss: 26385954816.0000 -
val_mean_absolute_error: 101380.1094
Epoch 237/500
219/219 - 1s - 6ms/step - loss: 28133468160.0000 -
mean_absolute_error: 107391.0312 - val_loss: 26341926912.0000 -
val_mean_absolute_error: 101685.4297
Epoch 238/500

219/219 - 1s - 3ms/step - loss: 28448911360.0000 -
mean_absolute_error: 108128.4766 - val_loss: 26315030528.0000 -
val_mean_absolute_error: 101660.2031
Epoch 239/500
219/219 - 1s - 6ms/step - loss: 28026105856.0000 -
mean_absolute_error: 107215.6875 - val_loss: 26489167872.0000 -
val_mean_absolute_error: 101245.8594
Epoch 240/500
219/219 - 2s - 8ms/step - loss: 28360796160.0000 -
mean_absolute_error: 107328.7344 - val_loss: 26297094144.0000 -
val_mean_absolute_error: 101716.9297
Epoch 241/500
219/219 - 1s - 5ms/step - loss: 28764985344.0000 -
mean_absolute_error: 107708.3516 - val_loss: 26330632192.0000 -
val_mean_absolute_error: 101291.0859
Epoch 242/500
219/219 - 1s - 5ms/step - loss: 28157302784.0000 -
mean_absolute_error: 107557.8438 - val_loss: 26429618176.0000 -
val_mean_absolute_error: 101121.0703
Epoch 243/500
219/219 - 1s - 4ms/step - loss: 27900862464.0000 -
mean_absolute_error: 106748.9609 - val_loss: 26261032960.0000 -
val_mean_absolute_error: 101556.9062
Epoch 244/500
219/219 - 1s - 5ms/step - loss: 27521005568.0000 -
mean_absolute_error: 106698.1406 - val_loss: 26277175296.0000 -
val_mean_absolute_error: 101302.0469
Epoch 245/500
219/219 - 1s - 3ms/step - loss: 28197314560.0000 -
mean_absolute_error: 107811.5781 - val_loss: 26344964096.0000 -
val_mean_absolute_error: 101078.6172
Epoch 246/500
219/219 - 1s - 3ms/step - loss: 28088358912.0000 -
mean_absolute_error: 107511.7188 - val_loss: 26308478976.0000 -
val_mean_absolute_error: 100970.2578
Epoch 247/500
219/219 - 1s - 3ms/step - loss: 28006350848.0000 -
mean_absolute_error: 107002.1875 - val_loss: 26414741504.0000 -
val_mean_absolute_error: 100904.9844
Epoch 248/500
219/219 - 1s - 3ms/step - loss: 28156465152.0000 -
mean_absolute_error: 107275.8438 - val_loss: 26247227392.0000 -
val_mean_absolute_error: 101022.7109
Epoch 249/500
219/219 - 1s - 3ms/step - loss: 28314099712.0000 -
mean_absolute_error: 107667.1484 - val_loss: 26220394496.0000 -
val_mean_absolute_error: 101127.4531
Epoch 250/500
219/219 - 1s - 3ms/step - loss: 28260767744.0000 -

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mean_absolute_error: 107939.3281 - val_loss: 26203463680.0000 -  
val_mean_absolute_error: 101004.2891  
Epoch 251/500  
219/219 - 1s - 3ms/step - loss: 28200755200.0000 -  
mean_absolute_error: 107110.3203 - val_loss: 26168354816.0000 -  
val_mean_absolute_error: 101172.1484  
Epoch 252/500  
219/219 - 1s - 3ms/step - loss: 28930166784.0000 -  
mean_absolute_error: 108321.9453 - val_loss: 26221844480.0000 -  
val_mean_absolute_error: 101439.4688  
Epoch 253/500  
219/219 - 1s - 3ms/step - loss: 27905216512.0000 -  
mean_absolute_error: 106351.4297 - val_loss: 26389276672.0000 -  
val_mean_absolute_error: 100787.2109  
Epoch 254/500  
219/219 - 1s - 6ms/step - loss: 27932297216.0000 -  
mean_absolute_error: 106757.1953 - val_loss: 26233702400.0000 -  
val_mean_absolute_error: 100897.1328  
Epoch 255/500  
219/219 - 1s - 3ms/step - loss: 28334432256.0000 -  
mean_absolute_error: 107827.7969 - val_loss: 26224310272.0000 -  
val_mean_absolute_error: 100703.9375  
Epoch 256/500  
219/219 - 2s - 8ms/step - loss: 27864692736.0000 -  
mean_absolute_error: 106546.7578 - val_loss: 26152595456.0000 -  
val_mean_absolute_error: 100793.3047  
Epoch 257/500  
219/219 - 1s - 5ms/step - loss: 28021704704.0000 -  
mean_absolute_error: 107264.2891 - val_loss: 26151766016.0000 -  
val_mean_absolute_error: 100694.4609  
Epoch 258/500  
219/219 - 1s - 6ms/step - loss: 28293296128.0000 -  
mean_absolute_error: 107739.0391 - val_loss: 26141587456.0000 -  
val_mean_absolute_error: 100870.8516  
Epoch 259/500  
219/219 - 1s - 4ms/step - loss: 27246770176.0000 -  
mean_absolute_error: 106474.6094 - val_loss: 26152327168.0000 -  
val_mean_absolute_error: 101395.2188  
Epoch 260/500  
219/219 - 1s - 5ms/step - loss: 27761082368.0000 -  
mean_absolute_error: 106803.7031 - val_loss: 26162038784.0000 -  
val_mean_absolute_error: 101108.6328  
Epoch 261/500  
219/219 - 1s - 6ms/step - loss: 28340385792.0000 -  
mean_absolute_error: 107398.2812 - val_loss: 26187509760.0000 -  
val_mean_absolute_error: 100518.2578  
Epoch 262/500  
219/219 - 1s - 6ms/step - loss: 28619782144.0000 -  
mean_absolute_error: 107188.5859 - val_loss: 26112735232.0000 -  
val_mean_absolute_error: 101275.9766
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Epoch 263/500
219/219 - 1s - 3ms/step - loss: 28174247936.0000 -
mean_absolute_error: 107019.4141 - val_loss: 26275934208.0000 -
val_mean_absolute_error: 100552.3281
Epoch 264/500
219/219 - 1s - 6ms/step - loss: 27845771264.0000 -
mean_absolute_error: 106913.6016 - val_loss: 26347532288.0000 -
val_mean_absolute_error: 100681.7734
Epoch 265/500
219/219 - 1s - 6ms/step - loss: 28173824000.0000 -
mean_absolute_error: 107123.7500 - val_loss: 26074564608.0000 -
val_mean_absolute_error: 100955.9922
Epoch 266/500
219/219 - 1s - 3ms/step - loss: 27913119744.0000 -
mean_absolute_error: 106439.7500 - val_loss: 26155497472.0000 -
val_mean_absolute_error: 101098.1875
Epoch 267/500
219/219 - 1s - 6ms/step - loss: 27604201472.0000 -
mean_absolute_error: 106054.4297 - val_loss: 26099173376.0000 -
val_mean_absolute_error: 100638.0078
Epoch 268/500
219/219 - 1s - 3ms/step - loss: 28098811904.0000 -
mean_absolute_error: 107147.7500 - val_loss: 26084313088.0000 -
val_mean_absolute_error: 100448.7578
Epoch 269/500
219/219 - 1s - 5ms/step - loss: 28197419008.0000 -
mean_absolute_error: 106864.0625 - val_loss: 26027180032.0000 -
val_mean_absolute_error: 100524.5156
Epoch 270/500
219/219 - 1s - 6ms/step - loss: 27635081216.0000 -
mean_absolute_error: 106694.7578 - val_loss: 25970802688.0000 -
val_mean_absolute_error: 100540.1172
Epoch 271/500
219/219 - 1s - 6ms/step - loss: 27891038208.0000 -
mean_absolute_error: 106690.4844 - val_loss: 25974407168.0000 -
val_mean_absolute_error: 100471.8281
Epoch 272/500
219/219 - 1s - 4ms/step - loss: 27952322560.0000 -
mean_absolute_error: 106599.7812 - val_loss: 26020005888.0000 -
val_mean_absolute_error: 101088.0312
Epoch 273/500
219/219 - 1s - 5ms/step - loss: 27855880192.0000 -
mean_absolute_error: 106138.1797 - val_loss: 25992869888.0000 -
val_mean_absolute_error: 100588.9141
Epoch 274/500
219/219 - 1s - 6ms/step - loss: 27973347328.0000 -
mean_absolute_error: 106693.3906 - val_loss: 26091859968.0000 -
val_mean_absolute_error: 100481.1094
Epoch 275/500

219/219 - 1s - 3ms/step - loss: 27739451392.0000 -
mean_absolute_error: 106168.8906 - val_loss: 26055821312.0000 -
val_mean_absolute_error: 101433.5859
Epoch 276/500
219/219 - 1s - 3ms/step - loss: 27714193408.0000 -
mean_absolute_error: 106626.5312 - val_loss: 25971163136.0000 -
val_mean_absolute_error: 100433.5781
Epoch 277/500
219/219 - 1s - 3ms/step - loss: 27053033472.0000 -
mean_absolute_error: 105871.9141 - val_loss: 26185830400.0000 -
val_mean_absolute_error: 100287.0000
Epoch 278/500
219/219 - 1s - 6ms/step - loss: 28086546432.0000 -
mean_absolute_error: 106734.9219 - val_loss: 25966229504.0000 -
val_mean_absolute_error: 101214.0703
Epoch 279/500
219/219 - 1s - 6ms/step - loss: 28116887552.0000 -
mean_absolute_error: 106870.7969 - val_loss: 26153459712.0000 -
val_mean_absolute_error: 100248.6641
Epoch 280/500
219/219 - 1s - 5ms/step - loss: 27456557056.0000 -
mean_absolute_error: 105624.2734 - val_loss: 26021199872.0000 -
val_mean_absolute_error: 100256.2031
Epoch 281/500
219/219 - 1s - 4ms/step - loss: 27888685056.0000 -
mean_absolute_error: 105947.6016 - val_loss: 25965977600.0000 -
val_mean_absolute_error: 100123.1328
Epoch 282/500
219/219 - 1s - 5ms/step - loss: 27552356352.0000 -
mean_absolute_error: 105976.4609 - val_loss: 25968705536.0000 -
val_mean_absolute_error: 100207.9688
Epoch 283/500
219/219 - 1s - 6ms/step - loss: 27118995456.0000 -
mean_absolute_error: 106264.2031 - val_loss: 25885315072.0000 -
val_mean_absolute_error: 100541.1016
Epoch 284/500
219/219 - 1s - 5ms/step - loss: 27765458944.0000 -
mean_absolute_error: 106544.3672 - val_loss: 25906018304.0000 -
val_mean_absolute_error: 100671.1250
Epoch 285/500
219/219 - 1s - 6ms/step - loss: 27580854272.0000 -
mean_absolute_error: 106013.2109 - val_loss: 25841068032.0000 -
val_mean_absolute_error: 100442.2969
Epoch 286/500
219/219 - 1s - 5ms/step - loss: 27311392768.0000 -
mean_absolute_error: 106007.1719 - val_loss: 25890115584.0000 -
val_mean_absolute_error: 100115.2188
Epoch 287/500
219/219 - 1s - 4ms/step - loss: 27635140608.0000 -

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mean_absolute_error: 105612.0391 - val_loss: 25883142144.0000 -  
val_mean_absolute_error: 99996.4766  
Epoch 288/500  
219/219 - 1s - 3ms/step - loss: 27701018624.0000 -  
mean_absolute_error: 106010.4062 - val_loss: 25869508608.0000 -  
val_mean_absolute_error: 100774.3984  
Epoch 289/500  
219/219 - 1s - 3ms/step - loss: 27156510720.0000 -  
mean_absolute_error: 105612.0938 - val_loss: 25861390336.0000 -  
val_mean_absolute_error: 100031.3359  
Epoch 290/500  
219/219 - 1s - 3ms/step - loss: 27281981440.0000 -  
mean_absolute_error: 106043.1328 - val_loss: 25793179648.0000 -  
val_mean_absolute_error: 100295.6562  
Epoch 291/500  
219/219 - 1s - 6ms/step - loss: 27792592896.0000 -  
mean_absolute_error: 106229.0156 - val_loss: 25842540544.0000 -  
val_mean_absolute_error: 100500.3203  
Epoch 292/500  
219/219 - 1s - 3ms/step - loss: 27675697152.0000 -  
mean_absolute_error: 105764.5234 - val_loss: 25929093120.0000 -  
val_mean_absolute_error: 100071.3906  
Epoch 293/500  
219/219 - 1s - 3ms/step - loss: 27249651712.0000 -  
mean_absolute_error: 105247.2812 - val_loss: 25902116864.0000 -  
val_mean_absolute_error: 99945.1719  
Epoch 294/500  
219/219 - 1s - 3ms/step - loss: 27226990592.0000 -  
mean_absolute_error: 105732.8203 - val_loss: 25916235776.0000 -  
val_mean_absolute_error: 101180.4688  
Epoch 295/500  
219/219 - 1s - 3ms/step - loss: 28079446016.0000 -  
mean_absolute_error: 106880.4688 - val_loss: 25933533184.0000 -  
val_mean_absolute_error: 99874.7500  
Epoch 296/500  
219/219 - 1s - 3ms/step - loss: 27240699904.0000 -  
mean_absolute_error: 105358.7969 - val_loss: 25866592256.0000 -  
val_mean_absolute_error: 101273.4062  
Epoch 297/500  
219/219 - 1s - 6ms/step - loss: 27056914432.0000 -  
mean_absolute_error: 105953.0703 - val_loss: 25834825728.0000 -  
val_mean_absolute_error: 100742.1016  
Epoch 298/500  
219/219 - 1s - 3ms/step - loss: 27409084416.0000 -  
mean_absolute_error: 105638.9141 - val_loss: 25961908224.0000 -  
val_mean_absolute_error: 99856.9141  
Epoch 299/500  
219/219 - 1s - 3ms/step - loss: 26865487872.0000 -  
mean_absolute_error: 105420.5703 - val_loss: 25821247488.0000 -
```

```
val_mean_absolute_error: 99777.8203
Epoch 300/500
219/219 - 1s - 3ms/step - loss: 27426801664.0000 -
mean_absolute_error: 106044.8281 - val_loss: 25859500032.0000 -
val_mean_absolute_error: 100091.2891
Epoch 301/500
219/219 - 1s - 5ms/step - loss: 27609389056.0000 -
mean_absolute_error: 105944.5938 - val_loss: 25716305920.0000 -
val_mean_absolute_error: 100015.2500
Epoch 302/500
219/219 - 1s - 6ms/step - loss: 27485796352.0000 -
mean_absolute_error: 105589.6953 - val_loss: 25807007744.0000 -
val_mean_absolute_error: 100924.9531
Epoch 303/500
219/219 - 1s - 6ms/step - loss: 27591921664.0000 -
mean_absolute_error: 106059.3672 - val_loss: 25842698240.0000 -
val_mean_absolute_error: 100808.7344
Epoch 304/500
219/219 - 1s - 4ms/step - loss: 27215951872.0000 -
mean_absolute_error: 105580.5703 - val_loss: 25710909440.0000 -
val_mean_absolute_error: 99960.5234
Epoch 305/500
219/219 - 1s - 4ms/step - loss: 27366428672.0000 -
mean_absolute_error: 105859.8984 - val_loss: 25746911232.0000 -
val_mean_absolute_error: 99789.3750
Epoch 306/500
219/219 - 1s - 3ms/step - loss: 27414460416.0000 -
mean_absolute_error: 105597.5469 - val_loss: 25661700096.0000 -
val_mean_absolute_error: 100036.9609
Epoch 307/500
219/219 - 1s - 3ms/step - loss: 27137101824.0000 -
mean_absolute_error: 105582.0312 - val_loss: 25725065216.0000 -
val_mean_absolute_error: 99727.2109
Epoch 308/500
219/219 - 1s - 3ms/step - loss: 27642761216.0000 -
mean_absolute_error: 105711.0391 - val_loss: 25713606656.0000 -
val_mean_absolute_error: 99835.7969
Epoch 309/500
219/219 - 1s - 5ms/step - loss: 27600691200.0000 -
mean_absolute_error: 106122.9219 - val_loss: 25666424832.0000 -
val_mean_absolute_error: 99873.6953
Epoch 310/500
219/219 - 1s - 3ms/step - loss: 27370201088.0000 -
mean_absolute_error: 106003.5000 - val_loss: 25789184000.0000 -
val_mean_absolute_error: 99802.4766
Epoch 311/500
219/219 - 1s - 5ms/step - loss: 27201976320.0000 -
mean_absolute_error: 105971.2812 - val_loss: 25749972992.0000 -
val_mean_absolute_error: 99525.6953
```

Epoch 312/500
219/219 - 1s - 3ms/step - loss: 27446788096.0000 -
mean_absolute_error: 106028.5312 - val_loss: 25647626240.0000 -
val_mean_absolute_error: 99788.2734
Epoch 313/500
219/219 - 1s - 3ms/step - loss: 27377324032.0000 -
mean_absolute_error: 105978.7969 - val_loss: 25734391808.0000 -
val_mean_absolute_error: 99682.1094
Epoch 314/500
219/219 - 1s - 3ms/step - loss: 27099949056.0000 -
mean_absolute_error: 105004.5000 - val_loss: 25673969664.0000 -
val_mean_absolute_error: 100036.5625
Epoch 315/500
219/219 - 1s - 3ms/step - loss: 26767226880.0000 -
mean_absolute_error: 105127.4219 - val_loss: 25707984896.0000 -
val_mean_absolute_error: 99690.3047
Epoch 316/500
219/219 - 1s - 3ms/step - loss: 27172145152.0000 -
mean_absolute_error: 105246.9766 - val_loss: 25781207040.0000 -
val_mean_absolute_error: 100795.1562
Epoch 317/500
219/219 - 1s - 3ms/step - loss: 27251073024.0000 -
mean_absolute_error: 105312.4219 - val_loss: 25670027264.0000 -
val_mean_absolute_error: 99669.8203
Epoch 318/500
219/219 - 1s - 5ms/step - loss: 27561998336.0000 -
mean_absolute_error: 105542.3281 - val_loss: 25672456192.0000 -
val_mean_absolute_error: 100313.1719
Epoch 319/500
219/219 - 1s - 4ms/step - loss: 26890330112.0000 -
mean_absolute_error: 105362.5156 - val_loss: 25683826688.0000 -
val_mean_absolute_error: 99634.3750
Epoch 320/500
219/219 - 2s - 7ms/step - loss: 26813360128.0000 -
mean_absolute_error: 104924.3984 - val_loss: 25736097792.0000 -
val_mean_absolute_error: 99748.1562
Epoch 321/500
219/219 - 1s - 4ms/step - loss: 26564849664.0000 -
mean_absolute_error: 104890.7344 - val_loss: 25610031104.0000 -
val_mean_absolute_error: 99424.0938
Epoch 322/500
219/219 - 1s - 5ms/step - loss: 27145502720.0000 -
mean_absolute_error: 105702.8750 - val_loss: 26000244736.0000 -
val_mean_absolute_error: 99748.2109
Epoch 323/500
219/219 - 1s - 3ms/step - loss: 27085725696.0000 -
mean_absolute_error: 104550.3984 - val_loss: 25594079232.0000 -
val_mean_absolute_error: 99428.2344
Epoch 324/500

219/219 - 1s - 3ms/step - loss: 27567611904.0000 -
mean_absolute_error: 105724.4922 - val_loss: 25589587968.0000 -
val_mean_absolute_error: 99730.7812
Epoch 325/500
219/219 - 1s - 3ms/step - loss: 27545118720.0000 -
mean_absolute_error: 105278.1875 - val_loss: 25795540992.0000 -
val_mean_absolute_error: 100739.6250
Epoch 326/500
219/219 - 1s - 3ms/step - loss: 27613892608.0000 -
mean_absolute_error: 105575.2109 - val_loss: 25604360192.0000 -
val_mean_absolute_error: 99252.0234
Epoch 327/500
219/219 - 1s - 3ms/step - loss: 27570395136.0000 -
mean_absolute_error: 105773.2969 - val_loss: 25678874624.0000 -
val_mean_absolute_error: 99333.5547
Epoch 328/500
219/219 - 1s - 6ms/step - loss: 27613982720.0000 -
mean_absolute_error: 105000.4922 - val_loss: 25581819904.0000 -
val_mean_absolute_error: 99382.9531
Epoch 329/500
219/219 - 1s - 6ms/step - loss: 26807857152.0000 -
mean_absolute_error: 105661.9766 - val_loss: 25568438272.0000 -
val_mean_absolute_error: 99305.9062
Epoch 330/500
219/219 - 1s - 6ms/step - loss: 27089326080.0000 -
mean_absolute_error: 104356.7891 - val_loss: 25579452416.0000 -
val_mean_absolute_error: 99261.6719
Epoch 331/500
219/219 - 1s - 3ms/step - loss: 27108952064.0000 -
mean_absolute_error: 105072.0312 - val_loss: 25611026432.0000 -
val_mean_absolute_error: 99771.3516
Epoch 332/500
219/219 - 1s - 3ms/step - loss: 26842097664.0000 -
mean_absolute_error: 105388.5078 - val_loss: 25866014720.0000 -
val_mean_absolute_error: 99514.3672
Epoch 333/500
219/219 - 2s - 7ms/step - loss: 26964883456.0000 -
mean_absolute_error: 105565.7109 - val_loss: 25587066880.0000 -
val_mean_absolute_error: 99235.1719
Epoch 334/500
219/219 - 1s - 6ms/step - loss: 26898421760.0000 -
mean_absolute_error: 105213.1406 - val_loss: 25655025664.0000 -
val_mean_absolute_error: 99356.3438
Epoch 335/500
219/219 - 1s - 7ms/step - loss: 27311075328.0000 -
mean_absolute_error: 105382.6641 - val_loss: 25524094976.0000 -
val_mean_absolute_error: 99726.9844
Epoch 336/500
219/219 - 1s - 3ms/step - loss: 26651334656.0000 -

```
mean_absolute_error: 104928.2266 - val_loss: 25688635392.0000 -  
val_mean_absolute_error: 99349.7188  
Epoch 337/500  
219/219 - 1s - 3ms/step - loss: 27110475776.0000 -  
mean_absolute_error: 104897.1641 - val_loss: 25699022848.0000 -  
val_mean_absolute_error: 99235.9609  
Epoch 338/500  
219/219 - 1s - 6ms/step - loss: 26863804416.0000 -  
mean_absolute_error: 105136.8047 - val_loss: 25469136896.0000 -  
val_mean_absolute_error: 99278.3438  
Epoch 339/500  
219/219 - 1s - 3ms/step - loss: 27076960256.0000 -  
mean_absolute_error: 105270.9219 - val_loss: 25540411392.0000 -  
val_mean_absolute_error: 99305.9766  
Epoch 340/500  
219/219 - 1s - 3ms/step - loss: 26949623808.0000 -  
mean_absolute_error: 105513.8672 - val_loss: 25559631872.0000 -  
val_mean_absolute_error: 99832.8672  
Epoch 341/500  
219/219 - 1s - 3ms/step - loss: 26731694080.0000 -  
mean_absolute_error: 104261.0859 - val_loss: 25492727808.0000 -  
val_mean_absolute_error: 99672.6953  
Epoch 342/500  
219/219 - 1s - 6ms/step - loss: 26633521152.0000 -  
mean_absolute_error: 104221.5469 - val_loss: 25459357696.0000 -  
val_mean_absolute_error: 99095.5000  
Epoch 343/500  
219/219 - 1s - 3ms/step - loss: 27011299328.0000 -  
mean_absolute_error: 104923.7188 - val_loss: 25450821632.0000 -  
val_mean_absolute_error: 99232.8438  
Epoch 344/500  
219/219 - 1s - 3ms/step - loss: 27084013568.0000 -  
mean_absolute_error: 105005.5703 - val_loss: 25828243456.0000 -  
val_mean_absolute_error: 99342.3906  
Epoch 345/500  
219/219 - 1s - 6ms/step - loss: 26346737664.0000 -  
mean_absolute_error: 104209.1094 - val_loss: 25521635328.0000 -  
val_mean_absolute_error: 99675.1797  
Epoch 346/500  
219/219 - 1s - 3ms/step - loss: 27071711232.0000 -  
mean_absolute_error: 105345.6797 - val_loss: 25569712128.0000 -  
val_mean_absolute_error: 99761.9531  
Epoch 347/500  
219/219 - 1s - 3ms/step - loss: 26974566400.0000 -  
mean_absolute_error: 104847.9062 - val_loss: 25462233088.0000 -  
val_mean_absolute_error: 99216.1562  
Epoch 348/500  
219/219 - 2s - 8ms/step - loss: 26856531968.0000 -  
mean_absolute_error: 105212.1406 - val_loss: 25528029184.0000 -
```

```
val_mean_absolute_error: 98990.5156
Epoch 349/500
219/219 - 1s - 4ms/step - loss: 26934118400.0000 -
mean_absolute_error: 104459.0391 - val_loss: 25466890240.0000 -
val_mean_absolute_error: 99094.7188
Epoch 350/500
219/219 - 1s - 5ms/step - loss: 26624788480.0000 -
mean_absolute_error: 104468.8516 - val_loss: 25544206336.0000 -
val_mean_absolute_error: 99003.8281
Epoch 351/500
219/219 - 1s - 5ms/step - loss: 27006969856.0000 -
mean_absolute_error: 104884.7734 - val_loss: 25468821504.0000 -
val_mean_absolute_error: 99166.6875
Epoch 352/500
219/219 - 1s - 4ms/step - loss: 26776356864.0000 -
mean_absolute_error: 104570.2656 - val_loss: 25483710464.0000 -
val_mean_absolute_error: 99347.2891
Epoch 353/500
219/219 - 1s - 3ms/step - loss: 26215473152.0000 -
mean_absolute_error: 104174.5625 - val_loss: 25320202240.0000 -
val_mean_absolute_error: 99204.4375
Epoch 354/500
219/219 - 1s - 6ms/step - loss: 26213246976.0000 -
mean_absolute_error: 104580.2734 - val_loss: 25398163456.0000 -
val_mean_absolute_error: 99119.7344
Epoch 355/500
219/219 - 1s - 3ms/step - loss: 26059870208.0000 -
mean_absolute_error: 103715.4844 - val_loss: 25313812480.0000 -
val_mean_absolute_error: 99162.7109
Epoch 356/500
219/219 - 1s - 3ms/step - loss: 27410159616.0000 -
mean_absolute_error: 104778.2188 - val_loss: 25353789440.0000 -
val_mean_absolute_error: 98903.5234
Epoch 357/500
219/219 - 1s - 3ms/step - loss: 25961891840.0000 -
mean_absolute_error: 103363.1641 - val_loss: 25359978496.0000 -
val_mean_absolute_error: 98857.7500
Epoch 358/500
219/219 - 1s - 3ms/step - loss: 27131054080.0000 -
mean_absolute_error: 104550.2422 - val_loss: 25469351936.0000 -
val_mean_absolute_error: 98925.0469
Epoch 359/500
219/219 - 1s - 3ms/step - loss: 26907416576.0000 -
mean_absolute_error: 104894.1875 - val_loss: 25506107392.0000 -
val_mean_absolute_error: 98878.0938
Epoch 360/500
219/219 - 1s - 3ms/step - loss: 26395684864.0000 -
mean_absolute_error: 103643.4141 - val_loss: 25275252736.0000 -
val_mean_absolute_error: 99111.0312
```


Epoch 361/500
219/219 - 1s - 3ms/step - loss: 26563452928.0000 -
mean_absolute_error: 104106.1484 - val_loss: 25382873088.0000 -
val_mean_absolute_error: 98770.0938
Epoch 362/500
219/219 - 1s - 3ms/step - loss: 26614743040.0000 -
mean_absolute_error: 104598.3828 - val_loss: 25333108736.0000 -
val_mean_absolute_error: 98633.8203
Epoch 363/500
219/219 - 1s - 3ms/step - loss: 26281472000.0000 -
mean_absolute_error: 104098.7969 - val_loss: 25263450112.0000 -
val_mean_absolute_error: 98969.8203
Epoch 364/500
219/219 - 1s - 3ms/step - loss: 26049458176.0000 -
mean_absolute_error: 103989.0391 - val_loss: 25294915584.0000 -
val_mean_absolute_error: 98702.9141
Epoch 365/500
219/219 - 1s - 3ms/step - loss: 27084730368.0000 -
mean_absolute_error: 105350.9766 - val_loss: 25427269632.0000 -
val_mean_absolute_error: 98684.1562
Epoch 366/500
219/219 - 2s - 8ms/step - loss: 26467497984.0000 -
mean_absolute_error: 104184.1406 - val_loss: 25299873792.0000 -
val_mean_absolute_error: 98962.8828
Epoch 367/500
219/219 - 1s - 6ms/step - loss: 26457952256.0000 -
mean_absolute_error: 104282.1094 - val_loss: 25207478272.0000 -
val_mean_absolute_error: 98848.8750
Epoch 368/500
219/219 - 1s - 5ms/step - loss: 26706626560.0000 -
mean_absolute_error: 104565.7969 - val_loss: 25204244480.0000 -
val_mean_absolute_error: 99184.2656
Epoch 369/500
219/219 - 1s - 4ms/step - loss: 26921357312.0000 -
mean_absolute_error: 104175.3516 - val_loss: 25264824320.0000 -
val_mean_absolute_error: 99664.4375
Epoch 370/500
219/219 - 1s - 6ms/step - loss: 26534402048.0000 -
mean_absolute_error: 103710.5156 - val_loss: 25277308928.0000 -
val_mean_absolute_error: 98758.9844
Epoch 371/500
219/219 - 1s - 6ms/step - loss: 26233616384.0000 -
mean_absolute_error: 103964.1172 - val_loss: 25482668032.0000 -
val_mean_absolute_error: 98719.7109
Epoch 372/500
219/219 - 1s - 6ms/step - loss: 26548480000.0000 -
mean_absolute_error: 103923.9141 - val_loss: 25299841024.0000 -
val_mean_absolute_error: 98661.5547
Epoch 373/500

219/219 - 1s - 6ms/step - loss: 26917632000.0000 -
mean_absolute_error: 104753.2969 - val_loss: 25319213056.0000 -
val_mean_absolute_error: 98825.5391
Epoch 374/500
219/219 - 1s - 3ms/step - loss: 26710104064.0000 -
mean_absolute_error: 104746.6172 - val_loss: 25379995648.0000 -
val_mean_absolute_error: 99362.2500
Epoch 375/500
219/219 - 1s - 5ms/step - loss: 25937588224.0000 -
mean_absolute_error: 103254.1172 - val_loss: 25305860096.0000 -
val_mean_absolute_error: 98813.8906
Epoch 376/500
219/219 - 1s - 3ms/step - loss: 25999818752.0000 -
mean_absolute_error: 103932.2188 - val_loss: 25327218688.0000 -
val_mean_absolute_error: 98990.7109
Epoch 377/500
219/219 - 1s - 3ms/step - loss: 26312712192.0000 -
mean_absolute_error: 103673.3906 - val_loss: 25134352384.0000 -
val_mean_absolute_error: 98930.9531
Epoch 378/500
219/219 - 1s - 6ms/step - loss: 26829608960.0000 -
mean_absolute_error: 104405.1953 - val_loss: 25330647040.0000 -
val_mean_absolute_error: 98920.6172
Epoch 379/500
219/219 - 1s - 5ms/step - loss: 26317832192.0000 -
mean_absolute_error: 103466.1641 - val_loss: 25350969344.0000 -
val_mean_absolute_error: 98472.1250
Epoch 380/500
219/219 - 1s - 6ms/step - loss: 26987268096.0000 -
mean_absolute_error: 104027.5781 - val_loss: 25223462912.0000 -
val_mean_absolute_error: 98703.0625
Epoch 381/500
219/219 - 1s - 5ms/step - loss: 26480908288.0000 -
mean_absolute_error: 104337.2422 - val_loss: 25243441152.0000 -
val_mean_absolute_error: 98608.5547
Epoch 382/500
219/219 - 1s - 4ms/step - loss: 26499059712.0000 -
mean_absolute_error: 104096.0078 - val_loss: 25359448064.0000 -
val_mean_absolute_error: 99663.4688
Epoch 383/500
219/219 - 1s - 5ms/step - loss: 26233378816.0000 -
mean_absolute_error: 103915.1484 - val_loss: 25299460096.0000 -
val_mean_absolute_error: 98905.3203
Epoch 384/500
219/219 - 1s - 6ms/step - loss: 26062571520.0000 -
mean_absolute_error: 103898.2109 - val_loss: 25292075008.0000 -
val_mean_absolute_error: 98584.6406
Epoch 385/500
219/219 - 1s - 3ms/step - loss: 26128988160.0000 -

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mean_absolute_error: 103617.4375 - val_loss: 25169651712.0000 -  
val_mean_absolute_error: 98427.6172  
Epoch 386/500  
219/219 - 1s - 6ms/step - loss: 25306830848.0000 -  
mean_absolute_error: 102950.5859 - val_loss: 25212889088.0000 -  
val_mean_absolute_error: 98671.1797  
Epoch 387/500  
219/219 - 1s - 6ms/step - loss: 25842851840.0000 -  
mean_absolute_error: 103151.1875 - val_loss: 25210107904.0000 -  
val_mean_absolute_error: 98296.3828  
Epoch 388/500  
219/219 - 1s - 6ms/step - loss: 25942265856.0000 -  
mean_absolute_error: 103189.8750 - val_loss: 25300484096.0000 -  
val_mean_absolute_error: 98946.8594  
Epoch 389/500  
219/219 - 1s - 6ms/step - loss: 25966659584.0000 -  
mean_absolute_error: 103633.9688 - val_loss: 25095233536.0000 -  
val_mean_absolute_error: 98328.8984  
Epoch 390/500  
219/219 - 1s - 3ms/step - loss: 26157160448.0000 -  
mean_absolute_error: 103316.1719 - val_loss: 25155338240.0000 -  
val_mean_absolute_error: 98395.1172  
Epoch 391/500  
219/219 - 1s - 3ms/step - loss: 26353547264.0000 -  
mean_absolute_error: 103436.4141 - val_loss: 25129826304.0000 -  
val_mean_absolute_error: 98236.5859  
Epoch 392/500  
219/219 - 2s - 7ms/step - loss: 26175987712.0000 -  
mean_absolute_error: 103455.9297 - val_loss: 25137725440.0000 -  
val_mean_absolute_error: 98349.6875  
Epoch 393/500  
219/219 - 1s - 5ms/step - loss: 26214598656.0000 -  
mean_absolute_error: 103693.5391 - val_loss: 25147727872.0000 -  
val_mean_absolute_error: 98692.8438  
Epoch 394/500  
219/219 - 1s - 6ms/step - loss: 25976690688.0000 -  
mean_absolute_error: 102946.2969 - val_loss: 25087234048.0000 -  
val_mean_absolute_error: 98408.7578  
Epoch 395/500  
219/219 - 1s - 4ms/step - loss: 25768095744.0000 -  
mean_absolute_error: 103238.4453 - val_loss: 25200732160.0000 -  
val_mean_absolute_error: 98882.6016  
Epoch 396/500  
219/219 - 1s - 6ms/step - loss: 25872257024.0000 -  
mean_absolute_error: 103336.0078 - val_loss: 25050083328.0000 -  
val_mean_absolute_error: 98097.2266  
Epoch 397/500  
219/219 - 1s - 6ms/step - loss: 25859643392.0000 -  
mean_absolute_error: 103453.5078 - val_loss: 25112842240.0000 -  
val_mean_absolute_error: 98093.9531
```

Epoch 398/500
219/219 - 1s - 3ms/step - loss: 25786513408.0000 -
mean_absolute_error: 103126.3828 - val_loss: 25095303168.0000 -
val_mean_absolute_error: 98206.4219
Epoch 399/500
219/219 - 1s - 3ms/step - loss: 26379495424.0000 -
mean_absolute_error: 104162.6797 - val_loss: 25645905920.0000 -
val_mean_absolute_error: 98684.0781
Epoch 400/500
219/219 - 1s - 3ms/step - loss: 25764724736.0000 -
mean_absolute_error: 103501.5703 - val_loss: 25080176640.0000 -
val_mean_absolute_error: 98407.1797
Epoch 401/500
219/219 - 1s - 5ms/step - loss: 26365042688.0000 -
mean_absolute_error: 103521.8047 - val_loss: 25081993216.0000 -
val_mean_absolute_error: 98094.4531
Epoch 402/500
219/219 - 1s - 3ms/step - loss: 25942896640.0000 -
mean_absolute_error: 103459.4531 - val_loss: 25164820480.0000 -
val_mean_absolute_error: 98147.2188
Epoch 403/500
219/219 - 1s - 6ms/step - loss: 26639456256.0000 -
mean_absolute_error: 103723.0156 - val_loss: 25165402112.0000 -
val_mean_absolute_error: 98235.6484
Epoch 404/500
219/219 - 1s - 3ms/step - loss: 25694586880.0000 -
mean_absolute_error: 102833.3438 - val_loss: 25038229504.0000 -
val_mean_absolute_error: 98303.4375
Epoch 405/500
219/219 - 1s - 3ms/step - loss: 26558347264.0000 -
mean_absolute_error: 104130.1562 - val_loss: 25290825728.0000 -
val_mean_absolute_error: 98102.9141
Epoch 406/500
219/219 - 1s - 3ms/step - loss: 26124279808.0000 -
mean_absolute_error: 103431.7266 - val_loss: 25010042880.0000 -
val_mean_absolute_error: 97948.1250
Epoch 407/500
219/219 - 2s - 7ms/step - loss: 26481002496.0000 -
mean_absolute_error: 103630.3516 - val_loss: 25191542784.0000 -
val_mean_absolute_error: 98095.8516
Epoch 408/500
219/219 - 1s - 6ms/step - loss: 26054850560.0000 -
mean_absolute_error: 103168.8594 - val_loss: 25157715968.0000 -
val_mean_absolute_error: 98374.5938
Epoch 409/500
219/219 - 1s - 5ms/step - loss: 25952245760.0000 -
mean_absolute_error: 103152.2500 - val_loss: 25115363328.0000 -
val_mean_absolute_error: 97963.0000
Epoch 410/500

219/219 - 1s - 4ms/step - loss: 26320248832.0000 -
mean_absolute_error: 103529.0781 - val_loss: 24990244864.0000 -
val_mean_absolute_error: 98086.6172
Epoch 411/500
219/219 - 1s - 6ms/step - loss: 26012641280.0000 -
mean_absolute_error: 103413.1328 - val_loss: 25145395200.0000 -
val_mean_absolute_error: 98398.0156
Epoch 412/500
219/219 - 1s - 6ms/step - loss: 26161473536.0000 -
mean_absolute_error: 103757.4062 - val_loss: 25036517376.0000 -
val_mean_absolute_error: 98288.7031
Epoch 413/500
219/219 - 1s - 3ms/step - loss: 26499778560.0000 -
mean_absolute_error: 103315.5938 - val_loss: 25411710976.0000 -
val_mean_absolute_error: 100634.7109
Epoch 414/500
219/219 - 1s - 3ms/step - loss: 26648901632.0000 -
mean_absolute_error: 103975.5703 - val_loss: 25147754496.0000 -
val_mean_absolute_error: 97896.0078
Epoch 415/500
219/219 - 1s - 3ms/step - loss: 25851498496.0000 -
mean_absolute_error: 103317.1016 - val_loss: 25283473408.0000 -
val_mean_absolute_error: 98153.8203
Epoch 416/500
219/219 - 1s - 6ms/step - loss: 25333348352.0000 -
mean_absolute_error: 102603.7031 - val_loss: 25067364352.0000 -
val_mean_absolute_error: 98558.8516
Epoch 417/500
219/219 - 1s - 3ms/step - loss: 26375983104.0000 -
mean_absolute_error: 103375.2109 - val_loss: 25070432256.0000 -
val_mean_absolute_error: 99275.6875
Epoch 418/500
219/219 - 1s - 3ms/step - loss: 25920264192.0000 -
mean_absolute_error: 103192.9219 - val_loss: 25063176192.0000 -
val_mean_absolute_error: 98155.8281
Epoch 419/500
219/219 - 1s - 3ms/step - loss: 26002536448.0000 -
mean_absolute_error: 103197.7266 - val_loss: 25101234176.0000 -
val_mean_absolute_error: 97828.7578
Epoch 420/500
219/219 - 1s - 3ms/step - loss: 25927563264.0000 -
mean_absolute_error: 102827.5547 - val_loss: 25168607232.0000 -
val_mean_absolute_error: 98084.0625
Epoch 421/500
219/219 - 2s - 8ms/step - loss: 25811294208.0000 -
mean_absolute_error: 103187.9766 - val_loss: 24957333504.0000 -
val_mean_absolute_error: 98083.9688
Epoch 422/500
219/219 - 1s - 5ms/step - loss: 26903777280.0000 -

```
mean_absolute_error: 103981.3281 - val_loss: 24925200384.0000 -  
val_mean_absolute_error: 97776.5781  
Epoch 423/500  
219/219 - 1s - 6ms/step - loss: 25684836352.0000 -  
mean_absolute_error: 103080.8438 - val_loss: 25009815552.0000 -  
val_mean_absolute_error: 97813.9844  
Epoch 424/500  
219/219 - 1s - 4ms/step - loss: 26254114816.0000 -  
mean_absolute_error: 103926.4844 - val_loss: 25065267200.0000 -  
val_mean_absolute_error: 97786.2578  
Epoch 425/500  
219/219 - 1s - 3ms/step - loss: 25736364032.0000 -  
mean_absolute_error: 103013.1953 - val_loss: 25063639040.0000 -  
val_mean_absolute_error: 98925.1016  
Epoch 426/500  
219/219 - 1s - 6ms/step - loss: 26336768000.0000 -  
mean_absolute_error: 103812.5312 - val_loss: 25017831424.0000 -  
val_mean_absolute_error: 98204.4922  
Epoch 427/500  
219/219 - 1s - 6ms/step - loss: 25875404800.0000 -  
mean_absolute_error: 103050.8984 - val_loss: 24948699136.0000 -  
val_mean_absolute_error: 98102.9297  
Epoch 428/500  
219/219 - 1s - 3ms/step - loss: 25701513216.0000 -  
mean_absolute_error: 102994.1641 - val_loss: 24962803712.0000 -  
val_mean_absolute_error: 97950.3125  
Epoch 429/500  
219/219 - 1s - 3ms/step - loss: 25633380352.0000 -  
mean_absolute_error: 103071.0156 - val_loss: 25036097536.0000 -  
val_mean_absolute_error: 97770.6875  
Epoch 430/500  
219/219 - 1s - 3ms/step - loss: 25824739328.0000 -  
mean_absolute_error: 103345.6094 - val_loss: 24981864448.0000 -  
val_mean_absolute_error: 97951.5859  
Epoch 431/500  
219/219 - 1s - 3ms/step - loss: 25932167168.0000 -  
mean_absolute_error: 102836.6328 - val_loss: 24955166720.0000 -  
val_mean_absolute_error: 97707.6406  
Epoch 432/500  
219/219 - 1s - 6ms/step - loss: 25971132416.0000 -  
mean_absolute_error: 102739.0547 - val_loss: 24998244352.0000 -  
val_mean_absolute_error: 97660.5625  
Epoch 433/500  
219/219 - 1s - 3ms/step - loss: 25759600640.0000 -  
mean_absolute_error: 103528.4609 - val_loss: 24961298432.0000 -  
val_mean_absolute_error: 97834.4531  
Epoch 434/500  
219/219 - 2s - 7ms/step - loss: 25295378432.0000 -  
mean_absolute_error: 102504.8203 - val_loss: 24948094976.0000 -
```

```
val_mean_absolute_error: 98304.8516
Epoch 435/500
219/219 - 1s - 5ms/step - loss: 25466818560.0000 -
mean_absolute_error: 102993.0391 - val_loss: 24943435776.0000 -
val_mean_absolute_error: 97736.9375
Epoch 436/500
219/219 - 1s - 6ms/step - loss: 25556918272.0000 -
mean_absolute_error: 102670.3281 - val_loss: 24877633536.0000 -
val_mean_absolute_error: 98357.3203
Epoch 437/500
219/219 - 1s - 6ms/step - loss: 25838370816.0000 -
mean_absolute_error: 102960.0938 - val_loss: 24785582080.0000 -
val_mean_absolute_error: 97708.3203
Epoch 438/500
219/219 - 1s - 5ms/step - loss: 25343846400.0000 -
mean_absolute_error: 102592.7422 - val_loss: 25025564672.0000 -
val_mean_absolute_error: 97582.8594
Epoch 439/500
219/219 - 1s - 5ms/step - loss: 25886230528.0000 -
mean_absolute_error: 103204.9297 - val_loss: 25024710656.0000 -
val_mean_absolute_error: 97639.8047
Epoch 440/500
219/219 - 1s - 4ms/step - loss: 25723035648.0000 -
mean_absolute_error: 102792.7656 - val_loss: 24939341824.0000 -
val_mean_absolute_error: 97613.3125
Epoch 441/500
219/219 - 1s - 6ms/step - loss: 25837352960.0000 -
mean_absolute_error: 103214.0469 - val_loss: 24898588672.0000 -
val_mean_absolute_error: 97865.8984
Epoch 442/500
219/219 - 1s - 5ms/step - loss: 25596227584.0000 -
mean_absolute_error: 102997.8438 - val_loss: 24829958144.0000 -
val_mean_absolute_error: 97606.1641
Epoch 443/500
219/219 - 1s - 3ms/step - loss: 25455343616.0000 -
mean_absolute_error: 102675.2109 - val_loss: 24883288064.0000 -
val_mean_absolute_error: 97681.1328
Epoch 444/500
219/219 - 1s - 6ms/step - loss: 26356680704.0000 -
mean_absolute_error: 103283.6406 - val_loss: 24832917504.0000 -
val_mean_absolute_error: 97440.0000
Epoch 445/500
219/219 - 1s - 3ms/step - loss: 25629857792.0000 -
mean_absolute_error: 102303.1328 - val_loss: 24835665920.0000 -
val_mean_absolute_error: 97821.5469
Epoch 446/500
219/219 - 1s - 6ms/step - loss: 25806931968.0000 -
mean_absolute_error: 102599.5234 - val_loss: 24806164480.0000 -
val_mean_absolute_error: 97616.0234
```

```
Epoch 447/500
219/219 - 1s - 3ms/step - loss: 25109133312.0000 -
mean_absolute_error: 102039.0156 - val_loss: 24959614976.0000 -
val_mean_absolute_error: 97434.3906
Epoch 448/500
219/219 - 1s - 3ms/step - loss: 25558343680.0000 -
mean_absolute_error: 102894.8828 - val_loss: 24958726144.0000 -
val_mean_absolute_error: 97576.5781
Epoch 449/500
219/219 - 1s - 5ms/step - loss: 25566636032.0000 -
mean_absolute_error: 102735.7969 - val_loss: 24983334912.0000 -
val_mean_absolute_error: 97451.7031
Epoch 450/500
219/219 - 1s - 3ms/step - loss: 25278842880.0000 -
mean_absolute_error: 102136.3281 - val_loss: 24891041792.0000 -
val_mean_absolute_error: 97894.7422
Epoch 451/500
219/219 - 1s - 4ms/step - loss: 25994762240.0000 -
mean_absolute_error: 103627.6016 - val_loss: 25080713216.0000 -
val_mean_absolute_error: 98180.8828
Epoch 452/500
219/219 - 1s - 6ms/step - loss: 25208768512.0000 -
mean_absolute_error: 102375.9922 - val_loss: 24857419776.0000 -
val_mean_absolute_error: 97419.1016
Epoch 453/500
219/219 - 1s - 7ms/step - loss: 25887657984.0000 -
mean_absolute_error: 102700.0703 - val_loss: 24885641216.0000 -
val_mean_absolute_error: 97599.6562
Epoch 454/500
219/219 - 1s - 4ms/step - loss: 25560113152.0000 -
mean_absolute_error: 102552.2500 - val_loss: 24979163136.0000 -
val_mean_absolute_error: 98096.5781
Epoch 455/500
219/219 - 1s - 3ms/step - loss: 25793337344.0000 -
mean_absolute_error: 102868.8750 - val_loss: 24948840448.0000 -
val_mean_absolute_error: 97701.0781
Epoch 456/500
219/219 - 1s - 3ms/step - loss: 25832065024.0000 -
mean_absolute_error: 103260.4375 - val_loss: 24959668224.0000 -
val_mean_absolute_error: 98556.2891
Epoch 457/500
219/219 - 1s - 6ms/step - loss: 25584111616.0000 -
mean_absolute_error: 103049.7891 - val_loss: 24825735168.0000 -
val_mean_absolute_error: 97494.2812
```

```
# Evaluate the model
```

```
train_score_1 = model_1.evaluate(arr_x_train, arr_y_train, verbose=0)
valid_score_1 = model_1.evaluate(arr_x_valid, arr_y_valid, verbose=0)
```

```
print('MLP Model 1:')
```



```
print('Train MAE: ', round(train_score_1[1], 2), ', Train Loss (MSE): ', round(train_score_1[0], 2))
print('Validation MAE: ', round(valid_score_1[1], 2), ', Validation Loss (MSE): ', round(valid_score_1[0], 2))
```

MLP Model 1:

Train MAE: 173582.06 , Train Loss (MSE): 77712015360.0

Validation MAE: 171632.0 , Validation Loss (MSE): 79435350016.0

Evaluate the model

```
train_score_2 = model_2.evaluate(arr_x_train, arr_y_train, verbose=0)
```

```
valid_score_2 = model_2.evaluate(arr_x_valid, arr_y_valid, verbose=0)
```

print('MLP Model 2:')

```
print('Train MAE: ', round(train_score_2[1], 2), ', Train Loss (MSE): ', round(train_score_2[0], 2))
```

```
print('Validation MAE: ', round(valid_score_2[1], 2), ', Validation Loss (MSE): ', round(valid_score_2[0], 2))
```

MLP Model 2:

Train MAE: 95003.5 , Train Loss (MSE): 22654341120.0

Validation MAE: 97708.38 , Validation Loss (MSE): 24785580032.0

```
import matplotlib.pyplot as plt
```

Predict on validation set

```
y_valid_predict_1 = model_1.predict(arr_x_valid)
```

Plot true vs predicted values

```
plt.scatter(arr_y_valid, y_valid_predict_1)
```

```
plt.ylabel('True Values')
```

```
plt.xlabel('Predicted Values')
```

```
plt.show()
```

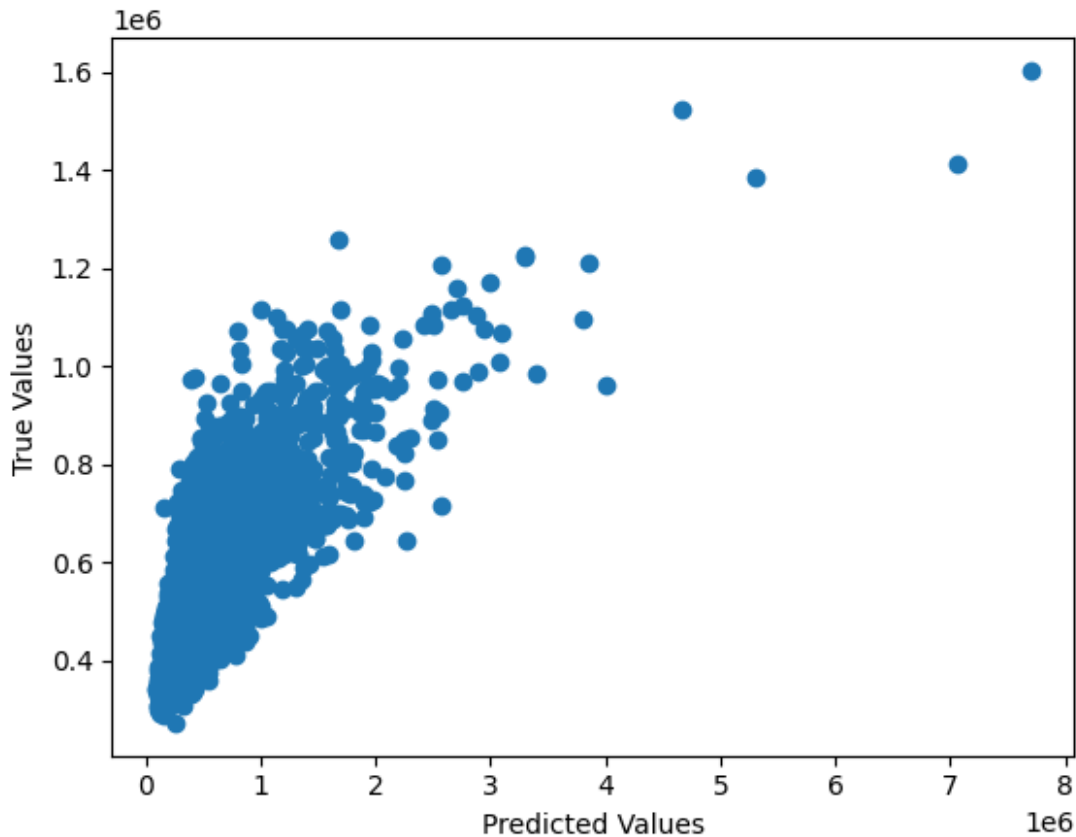
Calculate correlation

```
corr_result = np.corrcoef(arr_y_valid.reshape(-1),
```

```
y_valid_predict_1.reshape(-1))[0, 1]
```

```
print('The Correlation between true and predicted values is: ', round(corr_result, 3))
```

188/188 ————— 1s 2ms/step



The Correlation between true and predicted values is: 0.752

```
import matplotlib.pyplot as plt
```

```
# Predict on validation set
```

```
y_valid_predict_2 = model_2.predict(arr_x_valid)
```

```
# Plot true vs predicted values
```

```
plt.scatter(arr_y_valid, y_valid_predict_2)
```

```
plt.ylabel('True Values')
```

```
plt.xlabel('Predicted Values')
```

```
plt.show()
```

```
# Calculate correlation
```

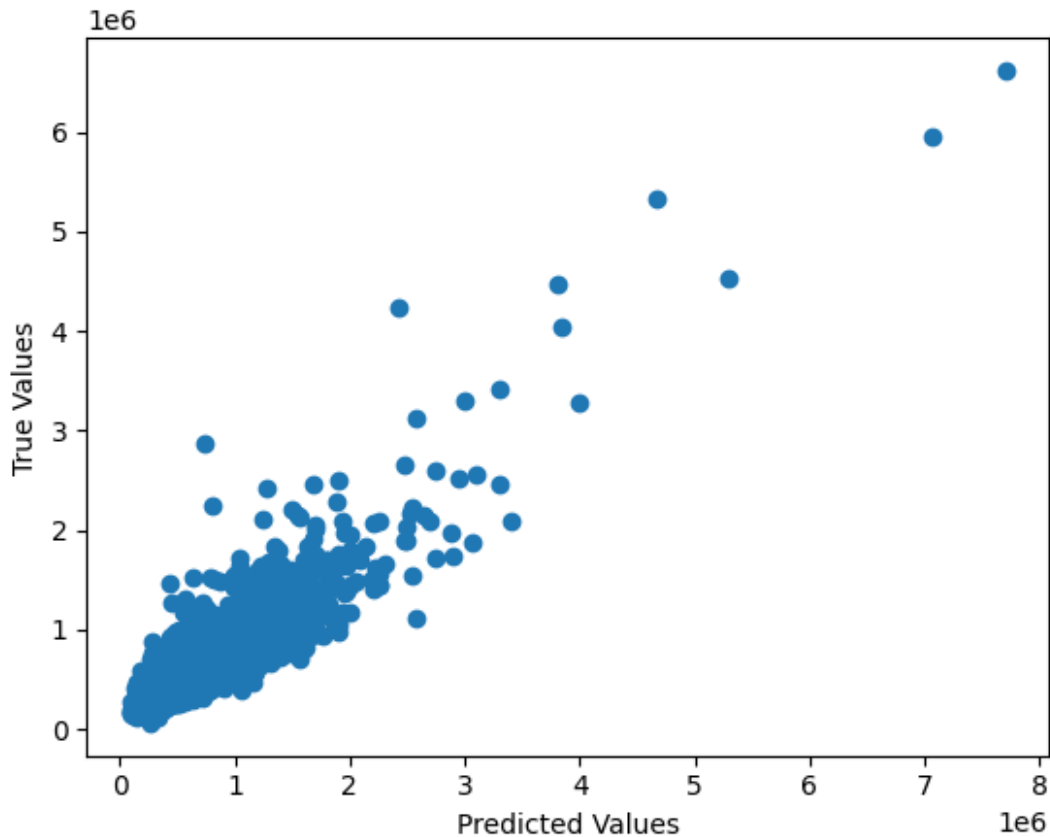
```
corr_result = np.corrcoef(arr_y_valid.reshape(-1),
```

```
y_valid_predict_2.reshape(-1))[0, 1]
```

```
print('The Correlation between true and predicted values is: ',
```

```
round(corr_result, 3))
```

188/188 ————— 1s 3ms/step



The Correlation between true and predicted values is: 0.903

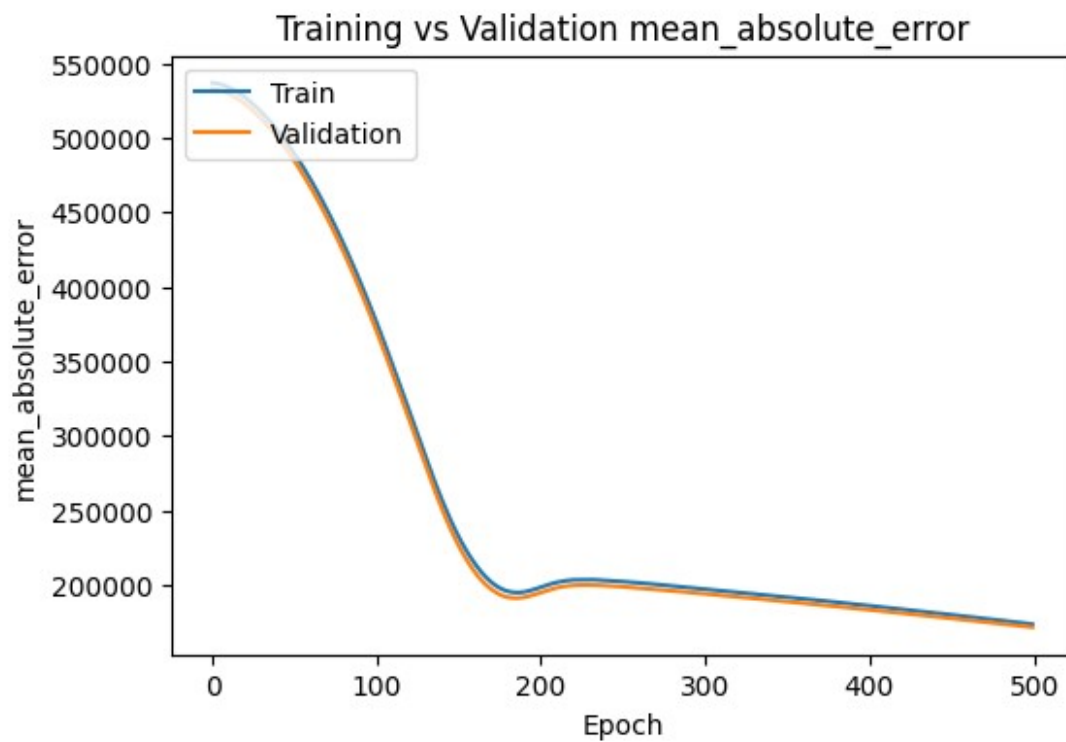
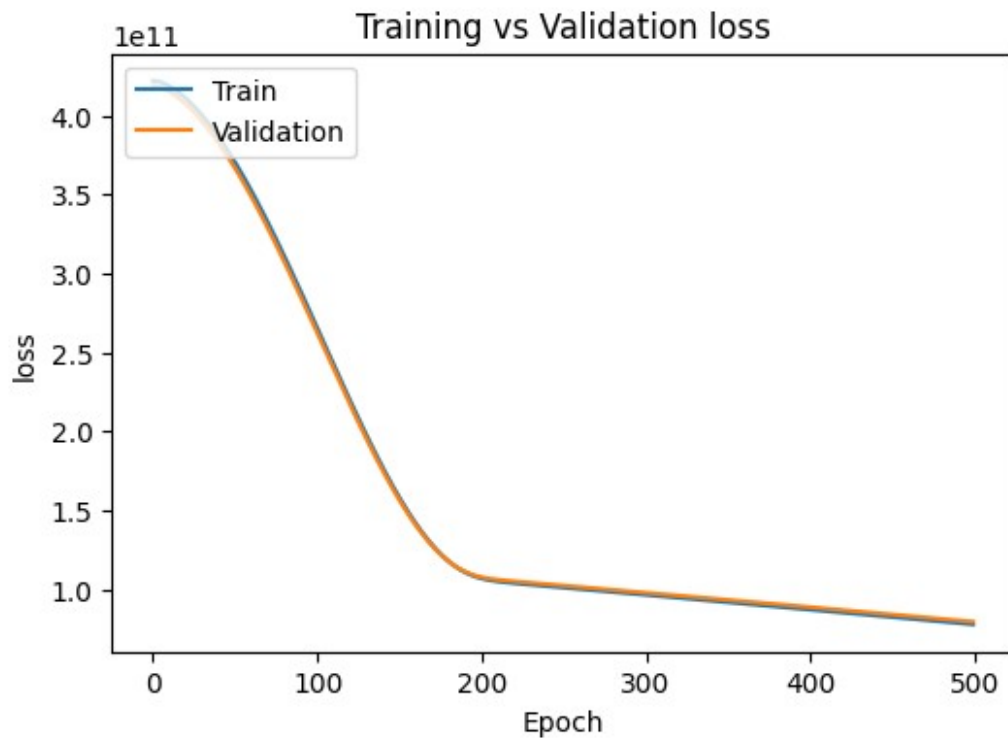
```
def plot_hist(history, xsize=6, ysize=5):
    fig_size = plt.rcParams["figure.figsize"]
    plt.rcParams["figure.figsize"] = [xsize, ysize]

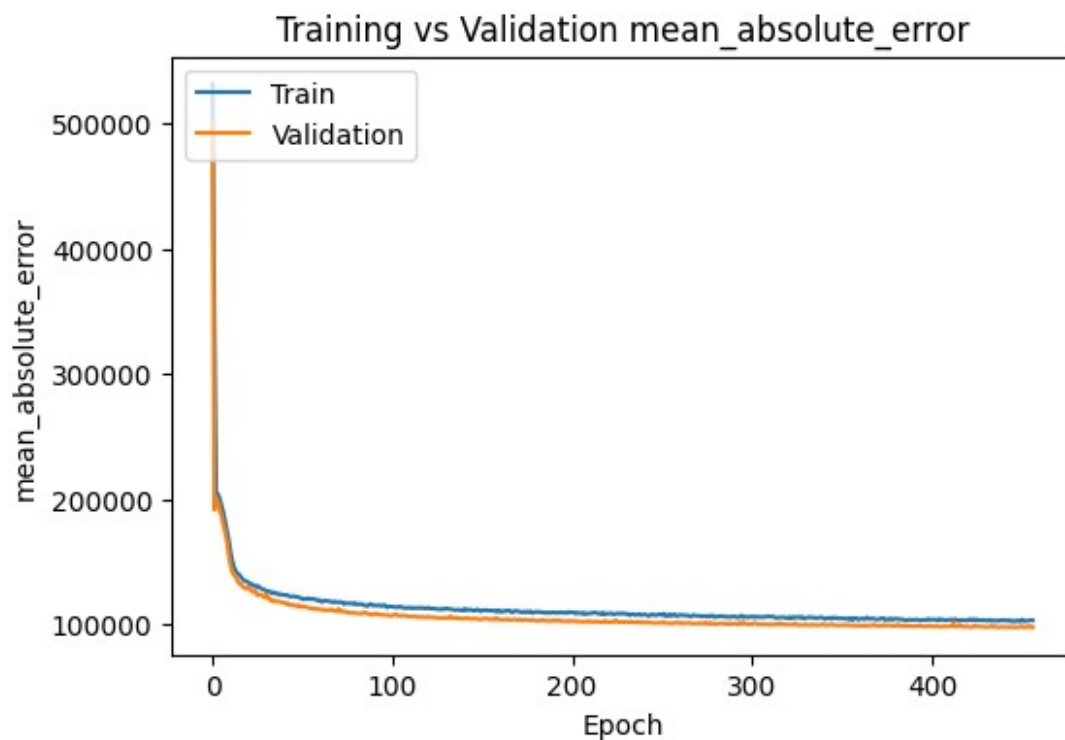
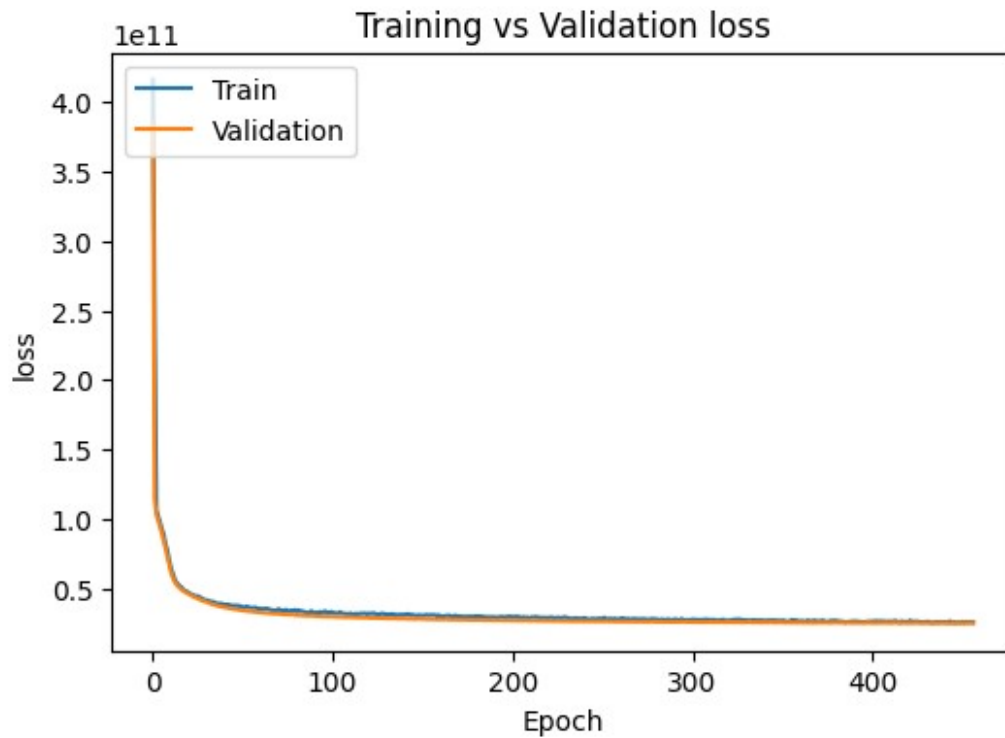
    keys = list(history.history.keys())
    n = len(keys) // 2
    train_keys = keys[:n]
    valid_keys = keys[n:]

    for i in range(n):
        plt.plot(history.history[train_keys[i]])
        plt.plot(history.history[valid_keys[i]])
        plt.title(f'Training vs Validation {train_keys[i]}')
        plt.ylabel(train_keys[i])
        plt.xlabel('Epoch')
        plt.legend(['Train', 'Validation'], loc='upper left')
        plt.show()

# Plot the history
plot_hist(history_1, xsize=6, ysize=4)
```

```
# Plot the history
plot_hist(history_2, xsize=6, ysize=4)
```





```
def plot_hist(history, xsize=6, ysize=5):  
    fig_size = plt.rcParams["figure.figsize"]  
    plt.rcParams["figure.figsize"] = [xsize, ysize]
```

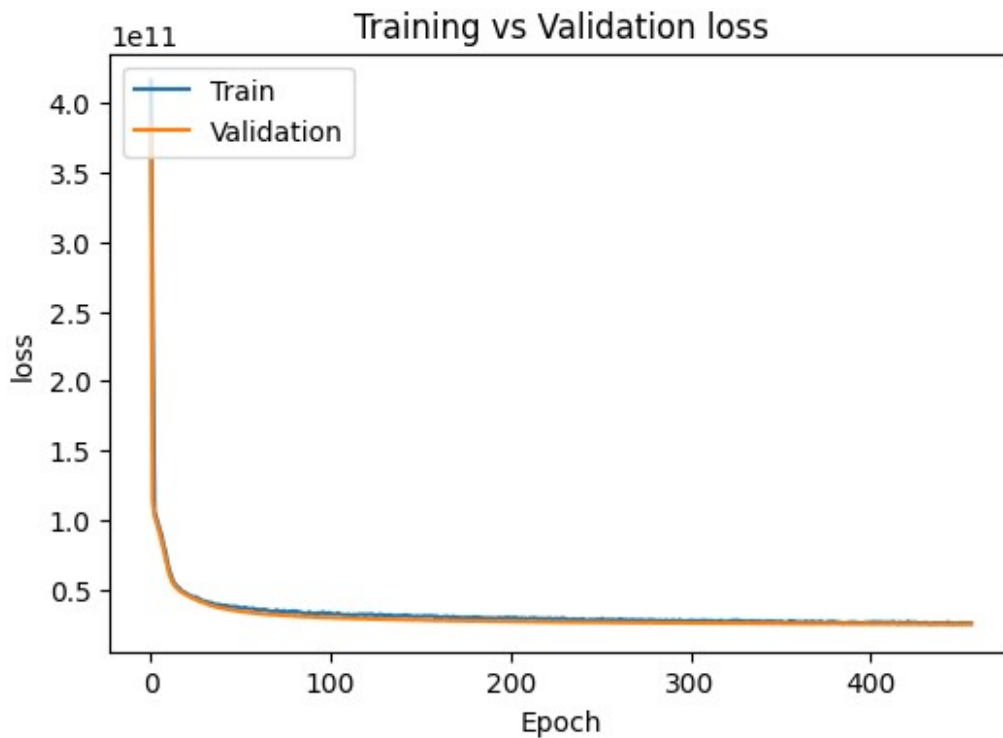
```

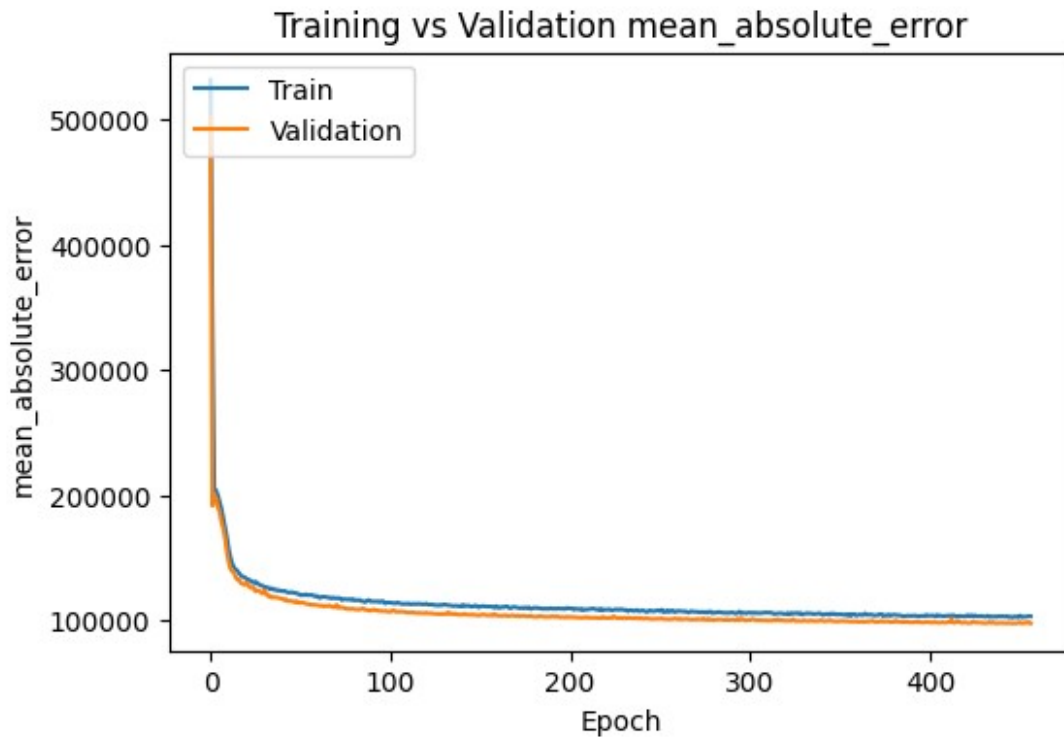
keys = list(history.history.keys())
n = len(keys) // 2
train_keys = keys[:n]
valid_keys = keys[n:]

for i in range(n):
    plt.plot(history.history[train_keys[i]])
    plt.plot(history.history[valid_keys[i]])
    plt.title(f'Training vs Validation {train_keys[i]}')
    plt.ylabel(train_keys[i])
    plt.xlabel('Epoch')
    plt.legend(['Train', 'Validation'], loc='upper left')
    plt.show()

# Plot the history
plot_hist(history_2, xsize=6, ysize=4)

```





4. Experiments Report

Provide a summary of experimental results, explain the meaning of your result and how your model can be used to address the related business problem.